



AFS 2021

ANNUAL REPORT

ADVOCATE. EDUCATE. INNOVATE.

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ADVOCATE. EDUCATE. INNOVATE.

Dear AFS Members and Friends,

We often say that no matter your specific interests in the metalcasting industry, there is a place for you in the American Foundry Society. Truer words have seldom been spoken.

This AFS Annual Report for the year 2021 celebrates and documents some of the many ways that AFS members and staff are making a difference through our Society:

- Optimizing safety and environmental stewardship;
- Fostering innovation and research;
- Facilitating knowledge transfer;
- Mastering skills that are essential to metalcasting excellence;
- Advocating for sound public policies;
- Providing economic forecasts and management resources;
- Encouraging successful careers in the metalcasting industry;
- Advocating for the use of castings;
- Facilitating business networking; and
- Providing stewardship for our \$43 billion industry.

We trust you will enjoy the Annual Report and that you will contact us with any questions or suggestions.

The opportunities are here, and we look forward to seeing you soon. There truly is a place for you at AFS.

Best regards,



Doug Kurkul
CEO, American Foundry Society

AFS Officers



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VICE PRESIDENT

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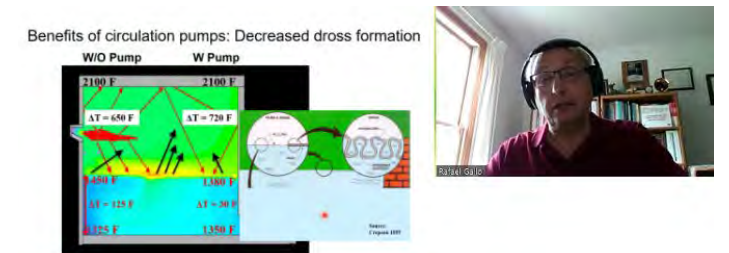
Doug Kurkul

Metalcasting Education & Technical Services

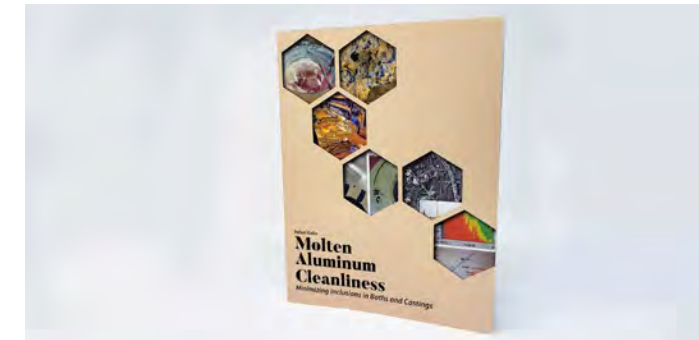
From innovative research and conferences to new publications and courses, 2021 marked a year of major educational and technical service advancements for AFS.

Aluminum Cleanliness Workshop Debuts

The AFS Aluminum & Light Metals Division hosted a new workshop in July 2021 for aluminum metalcasters who need specialized knowledge in issues such as inclusions and hydrogen gas-caused porosity. The Molten Aluminum Cleanliness Virtual Workshop was led by aluminum casting expert Rafael Gallo (Pyrotek) and covered practical ways to tackle impurities, including metallurgical and operational factors affecting cleanliness, and molten handling and treatment practices. The workshop took place entirely online.



Rafael Gallo discusses melt quality during the Molten Aluminum Cleanliness Workshop on July 20, 2021.



AFS Publishes New Aluminum Book

Coinciding with the Molten Aluminum Cleanliness Virtual Workshop, AFS released a new book in summer 2021 by technical consultant – and workshop presenter – Rafael Gallo. Building on Gallo's aluminum expertise and his extensive foundry work, *Molten Aluminum Cleanliness – Minimizing Inclusions in Baths and Castings* is filled with practical ways to minimize casting defects, plus foundry case studies and state-of-the-art molten metal analytical techniques.

AFS Hosts Copper Alloy Workshop



Metalcasters who work with copper alloys gather at AFS HQ for the Casting Copper Alloys Workshop in September.

Metalcasters came to AFS HQ in Schaumburg, Illinois, in September for an in-depth look at copper-base alloys. The Casting Copper Alloys Workshop featured sessions on process control, melt cleanliness, building foundry 4.0 infrastructure, additive manufacturing, and more, delivered by a few dozen expert presenters. The AFS Copper Alloy Division, which covers all areas of copper, brass, and bronze casting, planned the event.

Upgraded Alloy Database Project Goes Live

An online database of alloy properties was upgraded in 2021 thanks to a partnership between AFS, the American Metalcasting Consortium, and the Defense Logistics Agency.

Casting Alloy Data Search, commonly referred to as CADS, is a tool to assist design and foundry engineers by providing comprehensive cast alloy engineering properties. This includes section thickness, typical composition, casting process, and molding material used.

The new website, at www.AFSCADS.com, launched in August 2021 and is free to use. Whereas some sources provide outdated information or exclude original process-related details (such as part size, how it was made,

the thickness of the test bars, etc.), CADS offers additional detailed casting process information and search functionality. Users can search by strength property, select from an alloy grade list, or utilize a global alloy search.

The primary sources of CADS data are AFS research projects, as well as data from U.S.-based foundries or other research organizations. Jiten Shah (Product Development and Analysis LLC) is principal investigator.

AFS-funded Research Supports Innovation

At the heart of the society’s commitment to industry innovation is AFS-funded research. Currently, AFS is funding more than \$400,000 in metalcasting research across a wide range of alloys and processes. Each year, a portion of Corporate Member dues are designated to support this research. Another \$2 million in government-sponsored, defense-related casting research is managed by AFS.

The goal of all AFS research is to improve the efficiency, quality, and profitability of the foundry industry. To ensure that research is meeting important technical needs, all projects are monitored by industry experts from within the AFS technical division structure.

2021 AFS-funded Research Projects

Completed in 2021:

- Turbulent Gating Effect on C89833 – *Andy Shea, A. Y. McDonald*

Started in 2021:

- Disposable, Wireless Sensor Systems for Integration within Molds & Cores – *Eric MacDonald, University of Texas El Paso & Jerry Thiel, University of Northern Iowa*
- Iron Casting Life Cycle Analysis – *University of Michigan*
- Quantifying Aluminum Casting Quality through H Gas – *Dan Hoefert, Eck Industries*
- Low CRI, High CSR Coke Cupola Trials – *Stephen Hay, Hay Melting Solutions & Bruce Blatzer*

Ongoing in 2021:

- Determining the Effect of Boron in Gray Iron – *Laura Bartlett, Simon Lekakh, Missouri S&T*
- Effect of Ceramic Sand on Cast Iron Mechanical Properties – *Scott Giese, University of Northern Iowa*
- PVD Coatings to Aid Release for Permanent Mold Castings – *Stephen Midson, Colorado School of Mines*
- LFC Molds Produced Using Additive Manufacturing – *Marshall Miller, Tesseract 4D*
- LFC Molds Produced Using Polymer FDM & SLA Additive Manufacturing – *Marshall Miller, Tesseract 4D*
- Dimensional Tolerance Assessment Using 3D Printed Sand Casting Process – *Jiten Shah, PDA LLC & Tyler Nooyen, Waupaca Foundry Inc.*
- Dynamic Testing and Analytics from Working Green Sand Systems – *Sam Ramrattan, Lee Wells, Western Michigan University*

Other AFS Technical Resources

International Journal of Metalcasting

Published quarterly by AFS, the *International Journal of Metalcasting* is the official research journal of the World Foundry Organization (WFO). Peer-reviewed articles are selected from the best around the world. The journal offers a comprehensive outlook on the global metalcasting industry; publishes new advancements in metalcasting research, practice, and technology; and addresses an international audience of industry and scientific leaders in metalcasting. *IJMC* is overseen by Editor-in-Chief Tom Prucha.

IJMC has seen its Impact Factor, a widely used measure of the number of times a journal is cited by researchers, grow for three consecutive years. The most recent tally, announced in July 2021, showed the journal’s Impact Factor increasing 34% year-over-year.

Every AFS Corporate Membership includes a subscription to *IJMC*, which is published in partnership with Springer Nature Publications.

AFS Technical Library

The AFS Technical Library provides all members with unlimited access to more than 16,000 technical papers. The largest specialized metalcasting library in the world, this online database includes a dynamic search function

and personalized user experiences. Members can create a custom catalog of papers and set alerts for new articles. In 2021, over 13,000 papers were downloaded from the AFS Library.

AFS Members-Only Webinars

AFS Members-Only Webinars cover a wide variety of metalcasting topics, from alloy-specific technical information to public policy updates. Available for free to all members, AFS presented 23 live webinars in 2021. The most-watched webinar was “OSHA’s COVID-19 Emergency Temporary Standard & the Impact on US Metalcasting Industry.”

In addition to being presented live, these webinars also are available to watch on demand at www.afsinc.org/members-only-webinars.

Casting Connection

Casting Connection, AFS’s members-only message board, relaunched in 2021 with a new look and functionality. Now hosted at <https://hub.afsinc.org/castingconnection>, Casting Connection is a web forum where members can ask and answer technical questions, as well as a repository of information from shared interest groups and committees. Members continue to find it to be a useful resource for technical information.

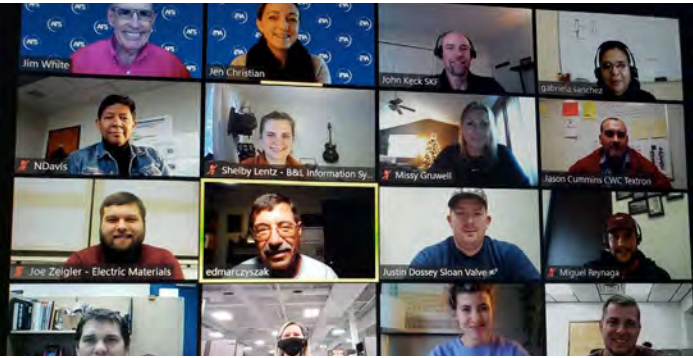
AFS Institute Expands Its Reach

It’s hard to get much farther from AFS HQ in suburban Chicago than Melbourne, but that didn’t stop the AFS Institute from welcoming students from as far afield as Australia – not to mention Turkey, Canada, Mexico, South Africa, Israel, and more – in 2021. Buoyed by the opportunities of web-based education, Institute instructors were able to greatly expand their reach last year, bringing Live Online classes to metalcasters all over the world, no travel necessary.

Enrollment numbers for the past year told the same story. In all, the Institute trained 404 students from at least nine countries in 2021. That represents year-over-year growth of 91% in the number of students who participated in AFS Institute courses.

Launched during the early days of the COVID pandemic, the Institute’s Live Online courses are interactive, instructor-led classes hosted on Zoom, allowing students of all experience levels to learn about everything from molding to melting to defect analysis.

The Institute also added more course options in 2021. Process Control for Engineers, the 39th class in the Institute’s catalogue, teaches engineers to develop a methodology of process control to attack production and quality problems. Additionally, the Institute partnered with Northwestern University’s Kellogg School of Management to offer Business Law for Leaders, an online certificate program for managers and executives. For more information on AFS Institute programming, visit afsinc.org/institute.



Students participate in a chat session during Introduction to Metalcasting: Live Online.

AFS Foundry e-Learning up 40%

From the first quarter of 2020 to the first quarter of 2021, AFS Foundry e-Learning users had completed about 4,755 individual instructional modules – an increase of more than 40 percent over the same period in the previous year. Foundry E-Learning is the Institute’s original digital workforce learning tool, offering more than 100 educational modules covering every major alloy and process, from the basics of metalcasting to highly advanced topics. The curriculum offers step-by-step instruction that can be completed at any time, on any shift.

Metalcasting Congress Went Virtual in 2021

Metalcasting Congress has seen many firsts over the years, usually in the form of new research or the unveiling of advanced technology. But the 125th installment in April 2021 was just as notable for its new format: for the first time since 1896, Metalcasting Congress was held entirely online.

Offered from April 12-22, 2021, on the 6Connex web platform, Metalcasting Congress 2021 featured more than 60 sessions from experts across the industry, plus a multimedia “exhibit floor” of leading suppliers and North American metalcasters which was staffed in real time by company representatives. The 2021 edition also was noteworthy for having two Hoyt Memorial Lectures: “Transformation of the Modern Foundry” by Greg Miskinis (retired from Waupaca Foundry) and “Metamorphosis Change and Transition” by Tom Prucha (editor-in-chief of *International Journal of Metalcasting* and president of MetalMorphosis LLC).

The decision to go virtual was a result of the ongoing COVID pandemic and restrictions on large gatherings. Plans are well underway for a return to a live CastExpo and Metalcasting Congress in Columbus, Ohio, on April 23-26. CastExpo 2022’s theme is “Future Directions in Metalcasting,” and many presentations and exhibits will focus on new technologies, equipment, and research.



A still from the 2021 Metalcasting Congress Virtual exhibit hall lobby.

Returning soon: CastExpo 2022

Where:
Greater Columbus Convention Center,
Columbus, Ohio, USA

When:
Saturday through Tuesday, April 23-26, 2022

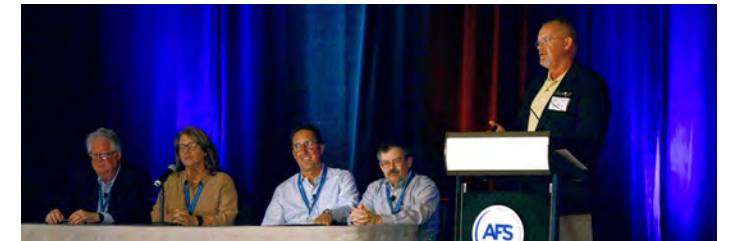
Registration:
www.CastExpo.com
Learn more on page 25.

Focus on Foundry Safety

Nothing is more important to AFS and its members than safety. In 2021, AFS empowered metalcasters to maintain exceptionally safe workplaces with a full slate of events and resources focused on EHS issues.

Leaders Share Safety Insights at Annual Summit

The 2021 Foundry Leadership Summit featured the debut of a new panel centered on metalcasting safety and the ways executives can encourage a safe and healthy work environment. “Safety at the Foundry: The CEO’s Perspective” was moderated by Brent Charlton, Safety Director at Metal Technologies, with panelists Matt Fetter (President and CEO, Metal Technologies), Angela Dine Schmeisser (President and CEO, St. Marys Foundry), Ted Schorn (Vice President, Enkei America), and Tom Teske (Vice President and General Manager, EJ). The Foundry Leadership Summit was Sept. 12-14 in Scottsdale, Arizona.



Left to right: Tom Teske, Angela Dine Schmeisser, Matt Fetter, Ted Schorn, and Brent Charlton speak during a safety panel at the 2021 Foundry Leadership Summit.

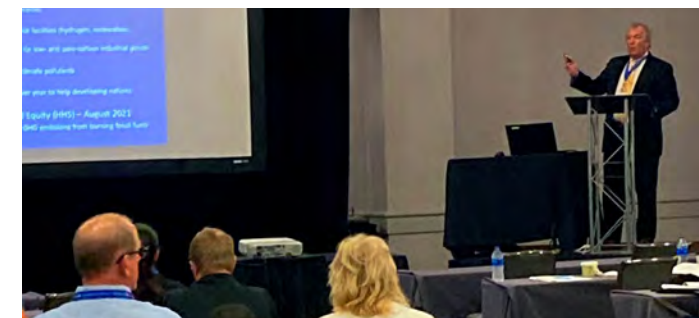
Health and Safety Issues Take Center Stage at Annual EHS Conference

The latest updates on COVID-19, heat stress, air toxics, and other timely environmental, health, and safety updates were shared with metalcasters at the 33rd EHS Conference, Oct. 5-7 in Birmingham, Alabama.

2021’s EHS conference returned to an in-person format following the previous year’s online-only event. Besides discussions and panels on technical issues, foundry case studies, and presentations from regulatory experts, the

conference also featured exhibits from leading EHS companies.

The EHS Division also presented awards, including its highest honor, the Childress-Loebler Lifetime Achievement Award, to Craig Schmeisser (Mad River Strategies). It was only the 14th time in AFS history that the division has chosen to honor someone with this award.



The 33rd EHS Conference took place in Birmingham, Alabama, in October.

Webinar Tackles “Year of COVID”

A unique AFS Members-Only Webinar held in December 2021 examined long-term trends in industry safety performance and the impact of COVID-19 and other disruptions. Presented by safety expert Ted Schorn (Enkei America), “2020 Safety Data and the Year of Covid: What Does It Tell Foundries?” examined the details of lost time injury and illness to derive suggested improvement paths for the industry. It was one of the industry’s first looks at 2020 safety data, which had been released just a few weeks prior.



Craig Schmeisser, left, receives the Childress-Loebler Lifetime Achievement Award from EHS Division Chair Ray Ostrowski.

Modern Casting to Spotlight EHS in Supplement

AFS’s flagship magazine, Modern Casting, announced in 2021 the publication of a unique print supplement focused entirely on environmental, health, and safety topics. Slated to be delivered in February 2022, the special edition will contain articles on sustainability case studies, a new philosophy on safety for foundry leaders, and using programs like ISO and VPP Star to be world-class in EHS.

Focus on Smart Manufacturing

With committees and events devoted to smart manufacturing, AFS is at the forefront of supporting metalcasters as they embrace the Industry 4.0 revolution.

New Conference Explores Industry 4.0



What do metalcasting leaders need to know about Industry 4.0 to make smart investments and gain a lasting advantage? How can new technologies improve productivity, profitability, and safety? These and other elements of smart manufacturing were the focus of a new AFS conference, Foundry Industry 4.0: Digital Manufacturing in the Metalcasting Industry. Debuting live online in June 2021 and available for streaming afterward, this virtual conference featured presentations from experts on robotics, cybersecurity, data analytics, biometrics, and other cutting-edge tools for metalcasters.

2022 Foundry Industry 4.0 Conference

July 26-27, 2022, Itasca, IL
(Near O'Hare International Airport)

Back by popular demand, the 2022 Foundry Industry 4.0 Conference will be the first of its kind in person, following the highly successful virtual event in 2021. Aimed at executives, owners, managers, and other leaders and decisionmakers, this conference will feature hands-on demonstrations of new and emerging technologies, case studies of successful smart manufacturing projects, and insightful presentations and discussions about the opportunities and advantages of Industry 4.0 for foundries.

Engineering Division Rebrands to Include Smart Manufacturing

In June 2021, the former AFS Engineering Division announced it was changing its name to better describe its focus and objectives. Now known as the AFS Engineering and Smart Manufacturing Division, the new name incorporates its mission to drive research and innovation in new technologies for the metalcasting industry.

The Engineering and Smart Manufacturing Division is led by Chair Brandon Kruse (Magaldi Technologies LLC) and Vice Chair Greg Bray (Electric Controls & Systems Inc.).

Working Groups to Focus on New Foundry Technologies

Following June's Foundry Industry 4.0 Conference, AFS held a virtual roundtable meeting on smart manufacturing attended by industry experts.

Attendees discussed smart manufacturing, how AFS can assist foundries to incorporate smart manufacturing into their operations, technical gaps that impede smart manufacturing activities in foundries, and where opportunities and concerns exist for metalcasters when it comes to these new technologies and processes.

Out of this roundtable, working groups were established and are evolving into standing committees overseen by the Engineering and Smart Manufacturing Division. Additional members and leaders are needed. Interested members can contact Tom Dore, Technical Director, at tdore@afsinc.org.

Currently, the four working groups are:

- Data Analysis and Processing
- Data Collection and Storage
- Sensors
- Standards and Common Languages

Foundry Sales & Management Resources

AFS supports its members' business goals through networking, marketplace insights, marketing opportunities, and more.

120+ Leaders Network at Return of Foundry Leadership Summit

About 120 metalcasting leaders gathered in Scottsdale, Arizona, for the Foundry Leadership Summit on Sept. 12-14, 2021. The conference – the first of its kinds since 2019 – included engaging conversations, timely presentations, and an opportunity to reconnect with friends and peers.

Presentations covered economics, leadership, politics, safety, talent development, and other key topics, and the

popular golf tournament brought several dozen players to the links. Additionally, three industry leaders were recognized with AFS awards during a dinner banquet: Denny Dotson (Dotson Iron Castings – Peter L. Simpson Gold Medal), Kathy Hayrynen (Applied Process Inc. – John H. Whiting Gold Medal), and Ted Schorn (Enkei America Inc. – Thomas W. Pangborn Gold Medal).



Attendees of the 2021 Foundry Leadership Summit enjoy the welcome reception.

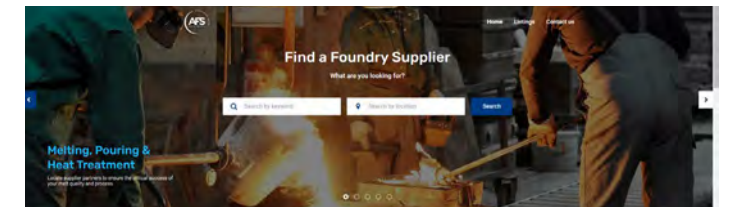


AFS President Mike Lenahan speaks at the 2021 Foundry Leadership Summit.

AFS Creates New Online Service for Foundries to Find Industry Suppliers

Metalcasters have a simple way to find the right products and services – and AFS Corporate Member suppliers have a new marketing tool – thanks to a web marketplace launched by AFS in October 2021.

SupplierMarketplace.net is a dynamic online service that allows metalcasters to search for vendors by keywords, location, and over 600 product categories. Every supplier listed is an AFS Corporate Member, adding value to membership while giving metalcasters confidence that each company is an experienced supplier to the foundry industry.



Listings may include videos, contacts, maps, brochures, and other information, and visitors can easily compare options before deciding on a vendor for consumables, equipment, consulting, or other need. To access the site, visit www.suppliermarketplace.net.

Cybersecurity Program Launched for Corporate Members

Manufacturers are big targets for malicious hackers, but a new program available to most AFS Corporate Members could help protect against digital breaches.

Established in 2021 in partnership with the National Association of Manufacturers, NAM Cyber Cover is a cybersecurity insurance and risk mitigation program created especially for manufacturers. It gives companies the advantage of insuring some of their most valuable

resources – their digital properties – against cyber threats while also providing them with a risk assessment to identify existing areas of vulnerability.

This program is available to all AFS Corporate Member foundries, as well as member suppliers who fall within the manufacturing NAICS code ranges of 31-33. For more information, visit www.ahtins.com/nam-cyber-cover-afs.

Small Businesses Save With Health Care Programs

Smaller AFS Corporate Members can offer the same health care as larger companies by taking advantage of the AFS-NAM Health Insurance program.

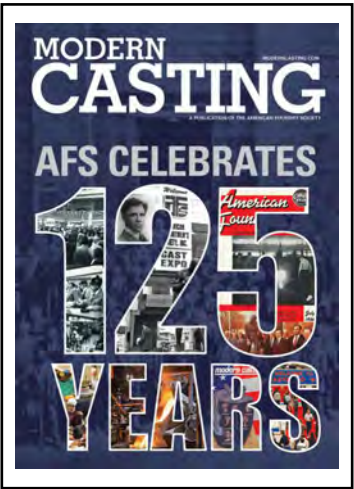
This new partnership with the National Association of Manufacturers (NAM), Mercer and UnitedHealthcare allows AFS Corporate Members with fewer than 100 employees to provide workers and their families with a convenient, Fortune 500-style benefits buying and enrollment experience. Besides the potential to save on premiums, the program includes many convenient resources for managing benefits.

Companies are encouraged to review the eligibility requirements, which are state-dependent, at afs.namhealthcare.com.

Modern Casting Helps Celebrate 125 Years of AFS

Modern Casting, now in its 83rd year of publication as the AFS metalcasting industry magazine, tallied another successful 12 months that included regular issues of *Modern Casting*, the 2021-2022 Metalcasting Equipment, Products, and Services supplement, 2021 Supplier Prospectus, and 125th Anniversary of AFS special edition. The 92-page anniversary edition, which was mailed with the April issue, was a unique opportunity to provide a history of AFS and its impact on the industry.

In 2021, the magazine also published six staff-written casting case studies on applications ranging from stereo equipment to home fitness as well as five foundry profiles. Topical articles covered business insurance, value-added services, plant maintenance, supply chain disruption, grinding, sustainability, and foundry 4.0, along with the latest industry research.



Casting Source Shines Light on Applications

AFS' magazine for casting buyers and designers, *Casting Source*, published six issues plus its annual Casting Source Directory and the Metalcaster Prospectus. A regular column shared important industry insider information to readers on customer/foundry relationships, patterns, cost competitiveness, and cost drivers. Stories of real-world casting applications were in every issue, from new product launches to casting conversions. Once again, *Casting Source* will be sponsoring the Casting Designers and Buyers Track at CastExpo 2022 in Columbus, Ohio, including sessions devoted to case studies, additive manufacturing, designing for casting, and foundry auditing.



AFS Energy Program Cuts Electricity, Gas Costs

Using the power of group purchasing, the AFS Energy Program helps AFS Corporate Members save money on electricity and gas bills in deregulated markets.

Through a partnership with APPI Energy, AFS Corporate Members have access to energy consultants who provide recommendations on pricing, market time and length of contract using data analytics and APPI's proprietary database. This database, which benchmarks historical and real-time prices in every deregulated market, allows for direct comparisons of energy prices.

To learn more about the AFS Energy Program and APPI Energy, including states where this program is available, visit www.afsinc.org/afs-energy-program.

2021 Casting of the Year

2021's AFS/Casting Source Casting of the Year Award was presented to Battle Creek, Michigan-based Magna for its front subframe engine cradle. The metalcaster used innovative engineering to successfully produce a large perimeter-type aluminum subframe for the 2021 Acura TLX, a premium sport sedan developed by Honda Development & Manufacturing of America, LLC.

The Casting of the Year competition, judged by a slate of metalcasting experts, is one of the industry's foremost recognitions of casting excellence.



Front Subframe Engine Cradle
Magna Cosma Casting Michigan CCMi
(Battle Creek, Michigan)



BEST EXAMPLE OF A CASTING CONVERSION
Magnesium Door Upper Beltline Reinforcement Casting
Meridian Lightweight Technologies, Inc.
(Strathroy, Ontario, Canada)/General Motors LLC (Detroit)



NEWCOMER OF THE YEAR
Lift Arm
Blue Diamond Steel Casting
(Pigeon, Michigan)



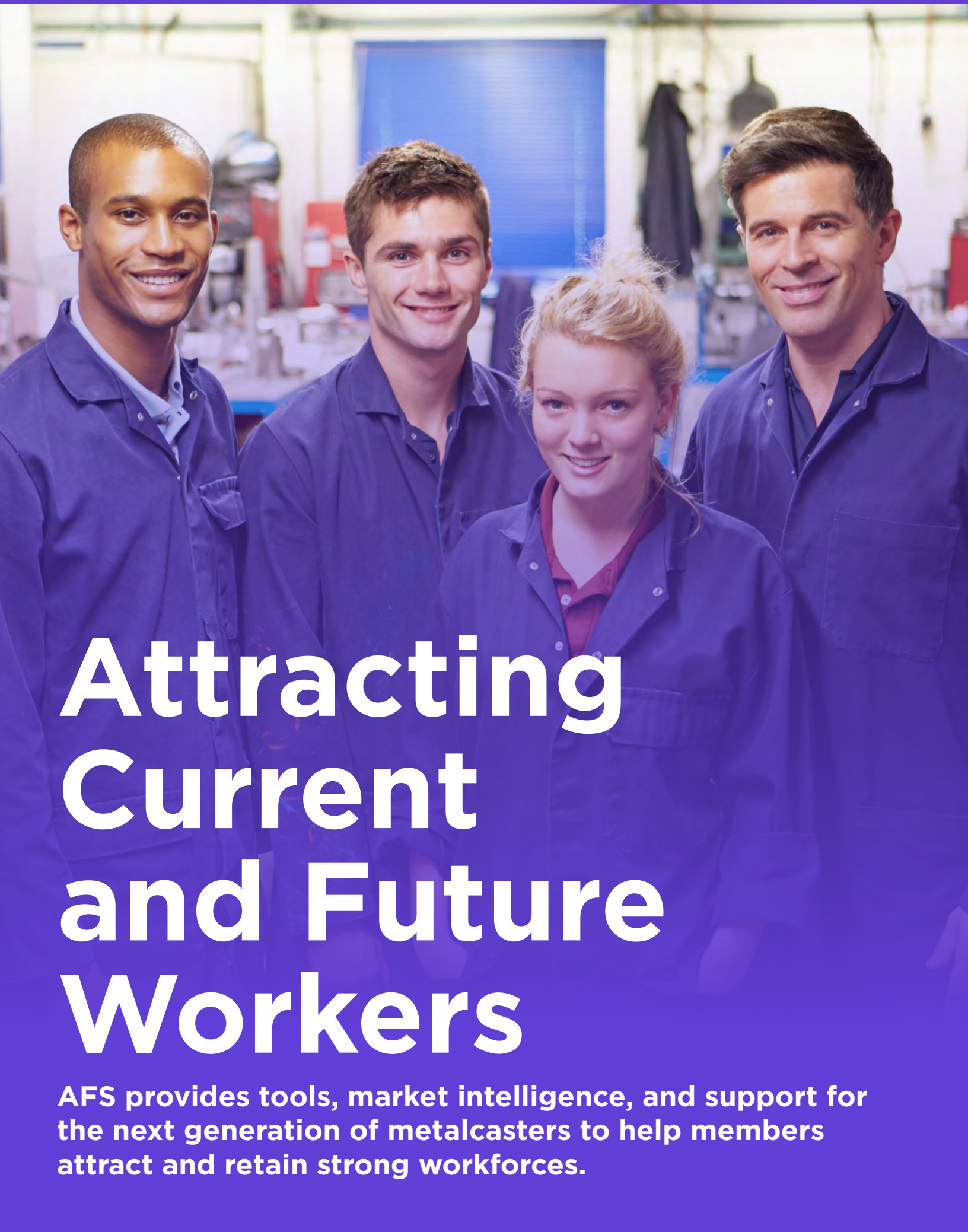
OUTSTANDING ACHIEVEMENT
Clamp
Waupaca Foundry - Marinette Plant 4
(Marinette, Wisconsin)



OUTSTANDING ACHIEVEMENT
Gyroid
Aristo-Cast Inc.
(Almont, Michigan)



OUTSTANDING ACHIEVEMENT
Mounting Bracket
Lethbridge Iron Works Co. Ltd.
(Lethbridge, Alberta, Canada)



Attracting Current and Future Workers

AFS provides tools, market intelligence, and support for the next generation of metalcasters to help members attract and retain strong workforces.

Sharing Findings on Workforce Issues

AFS compiles the Metalcasters Quarterly Outlook Survey, which tracks the North American foundry industry's business outlook to provide forward-looking economic information to metalcasters. The survey measures key marketplace metrics including workforce development

trends, sales projections, and the impact of federal policy on business, giving companies valuable insight as they develop future strategic plans... Results of these surveys are shared in AFS publications and used in the biannual *AFS Metalcasting Forecast & Trends*.

AFS Welcomes New Student Chapter

AFS expanded its footprint on college campuses in 2021, welcoming Universidad Autónoma de Nuevo León (San Nicolás de los Garza, Nuevo León, Mexico) as its newest AFS Student Chapter.

AFS has Student Chapters at 42 colleges and universities throughout North America. Run by students under the guidance of faculty and industrial advisors and supported by AFS, Student Chapter members further their metalcasting skills by networking with peers and professionals, manufacturing castings, conducting outreach, competing in casting competitions, and more. Common majors for student members include metalcasting, materials science, and manufacturing engineering, and many students go on to work within the metalcasting supply chain.

Upon graduating, student members of AFS receive a free year of individual membership. They also attend CastExpo and Metalcasting Congress free of charge.



Student Research Competition Relunched

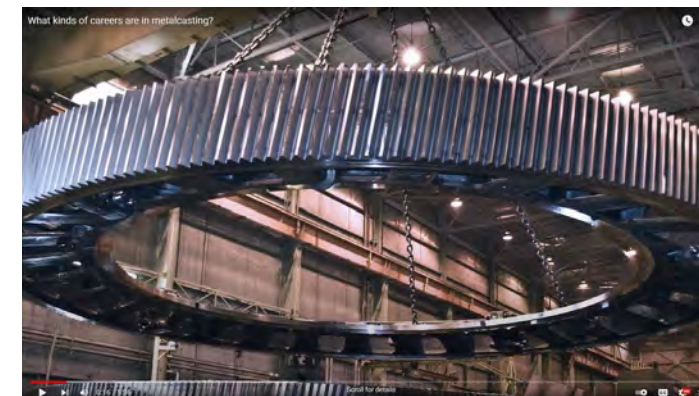
Undergraduate metalcasting students can win money for college and receive publication credits in the world's premier metalcasting scholarly journal as part of the newly relaunched IJMC/FEF Student Research Competition.

New for the 2021-2022 school year, this competition replaces prior contests with an updated presentation format and up to \$4,000 in scholarship awards. Top finishers will have their work published in the *International Journal of*

Metalcasting, a rare opportunity for undergrads. It is co-sponsored by the Foundry Educational Foundation and IJMC.

Entries will be judged by a team of industry experts, and qualifying submissions will be presented by students on the show floor at CastExpo 2022. Entries are being accepted through March 18, 2022. To learn more, visit afsinc.org/ijmc-fef-student-research-competition.

Video Showcases Career Opportunities



AFS produces videos and other content for educators, job-seekers, and career counselors to learn more about the great job opportunities afforded by the metalcasting industry. This includes AFS's own "Careers in Metalcasting" video, which profiles young employees who work across the metalcasting industry, from engineering to human resources. The video has been viewed thousands of times since its release in 2019, including during industry career fairs and college recruiting events. To see the video or share it, visit afsinc.org/careers-metalcasting.

Scholarships Support Metalcasting Students

AFS, its committees, chapters, and members are proud to support metalcasting education with a number of scholarships for college students pursuing degrees related to metalcasting.

This year, AFS announced the creation of the Jean Bye AFS Women in Metalcasting Scholarship, established through a generous donation from Dotson Iron Castings (Mankato, Minnesota). Bye served as CEO at Dotson Iron Castings and is a Past President of AFS.

Other scholarships include, but are not limited to, the IJMC/FEF Student Research Competition Scholarship, the Stephen Ducharme Student Scholarship, the Modern Casting Partners Scholarship, the Norman P. Lillybeck Memorial Scholarship, and many scholarships from AFS Chapters.

Additionally, AFS is represented by a staff member on the board of the H.H. Harris Foundation, which awards educational aid to students in the metallurgical and casting fields.

Kids Learn Casting With *Melting Point*



One of the most unique learning tools available to young students learning about metallurgy and manufacturing is *Melting Point*, published by AFS. This print and online resource includes articles and photos that explain the metalcasting process in terms grade-school students can understand – its target age is 5th to 9th grade. In fact, many of the articles are adapted from *Modern Casting* and *Casting Source*! Besides the science and technology of metalcasting, *Melting Point* also explains career opportunities, college programs, and how castings shape our world. To read *Melting Point* or request copies for an upcoming company or chapter event, visit afsinc.org/publications.

Collaboration With FEF

AFS is proud to support the Foundry Educational Foundation in its mission to encourage quality metalcasting education in institutions of higher learning. AFS staff attended FEF's College Industry Conference (CIC) on Nov. 18-19 in Chicago, where they networked with students and met with professors. The annual CIC includes a career fair, scholarship presentations, and more.

At the conference, AFS presented the Modern Casting Partners Scholarship to Joseph Watwood of Missouri University of Science & Technology. AFS has contributed more than \$113,000 in FEF scholarships throughout the years. Additionally, AFS partners with FEF on projects such as the IJMC/FEF Student Research Competition.

Foundry-in-a-Box Makes Casting Come Alive

Hands-on casting demonstrations are a great way to spur interest in metalcasting. That's why AFS uses Foundry-in-a-Box, a school-friendly casting project that allows people to create their own miniature tin castings while learning the basics of metalcasting. These kits are a hit at Manufacturing Day celebrations and STEM events, and they're commonly used by AFS Chapters during community outreach activities. AFS even produced a short instructional video about Foundry-in-a-Box, which you can view on AFS social media or on our YouTube channel, AFS MCTV.

Foundry-in-a Box kits are distributed by Kent State University. To learn more or request a kit, visit afsinc.org/demonstrations-foundry-box.

MFG Day Resources for Members

AFS has resources for Corporate Members who host Manufacturing Day activities. Held annually on the first Friday in October, Manufacturing Day is a nationwide celebration of industry aimed at showing communities and schools why manufacturing is important. In 2021, with restrictions on gatherings still active in some places, AFS and some Corporate Members held virtual Manufacturing Days. Whether online or in person, AFS provides tools for Manufacturing Day success, including infographics, videos, templates, sample letters, industry facts, and more. View all available resources at afsinc.org/manufacturing-day.



Advocacy Achievements

Throughout 2021, AFS was deeply engaged in advocacy on behalf of metalcasters. These efforts were led by **Government Affairs Chair Eric Meyers (Oil City Iron Works)** and **Vice Chair Alan Brink (Spring City Electrical)**.

Infrastructure Investment Victory

The Infrastructure Investment and Jobs Act will invest \$550 billion to improve roads, bridges, ports, water systems, rail, transit, and grid security. These investments will increase demand for components from U.S. foundries. A November 2021 AFS survey found the law will mean more business for 66% of responding foundries.

AFS met with dozens of lawmakers and staff to ensure the metalcasting industry's legislative priorities were included

Buy American for Taxpayer-funded Projects

The Biden Administration in July 2021 announced it will take the domestic content requirement from 55% to 60%, with a phase-up to 75% in 2029. The 2021 infrastructure law also strengthens domestic content requirements. AFS strongly advocates for Buy American requirements for taxpayer-funded projects.

Educating Lawmakers About Foundries and Castings



AFS members, as well as staff in Washington and at AFS HQ, have educated policymakers about the importance of castings through in-person meetings, Zoom conference calls, written communications, and direct phone calls. AFS draws on personal stories from lawmakers' constituents, in addition to the 2020 Economic Impact Analysis for the Metalcasting Industry statistics, when engaging in this direct advocacy.

Tax Policy

AFS is working on Capitol Hill to oppose a plan that would sharply raise taxes on small and mid-sized businesses, including many family-owned foundries and supplier companies organized as S-Corporations. Coalition efforts helped prevent enactment in 2021. AFS advocacy continues in 2022.

in the final package. AFS also submitted comments to the Commerce Dept. and advocated for provisions to expand efforts to mine, process, reclaim and recycle critical minerals, which also were included in the final package.

Separately, AFS supports the Cornyn-Padilla bill to allow flexibility to direct unspent state and local funds from the American Rescue Plan to infrastructure projects.

Advocacy on OSHA COVID Mandate

In January 2022, OSHA withdrew its COVID-19 Emergency Temporary Standard, which would have forced employers with 100 or more workers to mandate their employees be vaccinated or pass weekly COVID tests.

After the Administration announced the burdensome mandate last fall, AFS urged OSHA and the Office of Management and Budget to exempt the metalcasting industry from the ETS. AFS members Brent Charlton (Metal Technologies) and Jim Proctor (McWane, Inc.), joined by Doug Kurkul and Stephanie Salmon of the AFS staff, highlighted the detrimental effects the ETS would have on metalcasters and the broader industrial supply chain. AFS's Washington office continued to advocate this position until the ETS was withdrawn.

Truck Driver Shortage

AFS is advocating for legal changes to allow qualified drivers under the age of 21 to operate motor vehicles. The AFS-backed DRIVE Safe Act would help address the nation's supply-chain woes. A pilot program for the DRIVE Safe Act was included in the infrastructure package signed into law in November.

Clean Energy Initiative

AFS submitted comments to the U.S. Department of Energy on the technical challenges related to emissions reduction and decarbonization of the U.S. industrial sector and the scope of challenges best suited to be addressed through an Institute rather than other funding mechanisms. AFS staff collected member input and integrated technical expertise into the comments.

AFS Government Affairs Conference

With the U.S. Capitol shut down to visitors in Spring 2021, members of AFS conducted the Government Affairs Conference virtually, in lieu of the annual in-person Fly-In. Guest speakers included issue experts, key government staff members, and Rep. Rodney Davis (R-13-IL), ranking member of the Subcommittee on Highways and Transit of the House Transportation Committee. AFS also arranged two dozen meetings with members of Congress and their staff in lieu of in-person congressional visits, including U.S. Sen. Ted Cruz (R-TX), who is a key member of the Senate Commerce, Science and Transportation Committee.

Sen. Ted Cruz (R-TX) meets in 2018 with Eric Meyers, CEO of AFS Corporate Member Oil City Iron Works (Corsicana, Texas) and chair of the AFS Government Affairs Committee.



Member Plant Tours



Numerous AFS members hosted plant tours for members of Congress and other public officials in 2021. These visits provide insight into the importance of today's foundry industry.

U.S. Rep. Mike Bost (R-IL) visits AFS Corporate Member Amsted Rail's Granite City plant on Oct. 6, 2021. Pictured, from left, are : Matt London, Director Government Affairs; Matt Cook, Chief Operations Officer-ASF Truck Systems; Rep. Bost; Donnie Chandler, Vice President Operations-ASF; and Patrick Ameen, Vice President Industry Relations and AFS Board Member.

AFS Coordinates With AMC on Research Portfolio

AFS researchers, staff, and member partners coordinated on ongoing research for the American Metalcasting Consortium in 2021. At November's 2021 American Metalcasting Consortium Technology Review meetings, experts presented on several research and industrial initiatives, including cast-metal lattice structures for lightweight applications, integration of ICME tools in casting design and process optimization for intelligent manufacturing, the CADS (Casting Alloy Database Selector) database development, and dispersion methods for nano-composite castings, among other topics.

AFS was represented by staff members Brian Began, Tom Doré, Doug Kurkul, and the late Steve Robison, along with Alan Druschitz (Virginia Tech), Tom Prucha (International Journal of Metalcasting), Jiten Shah (Product Development and Analysis LLC), Frank Headington (consultant), and Dave Weiss (Eck Industries).



Member Involvement

AFS is driven by the dedication of its members, whose time, talents, and commitment to our industry spur the society's success.

AFS Committees

Led by volunteers in collaboration with AFS staff, AFS committees oversee research and publications, plan conferences and webinars, and help to advance the AFS mission of advocacy, education, and innovation for the metalcasting industry. Nearly 1,000 members serve on AFS committees, which are organized under Technical Council Divisions and Management Council Divisions. For information on how you can further your career by joining a committee, visit afsinc.org/afs-committees.

Technical Council Divisions

- Additive Manufacturing
- Aluminum and Light Metals
- Cast Iron
- Copper Alloy
- EHS
- Engineering and Smart Manufacturing
- Lost Foam
- Melting Methods
- Molding
- Steel

Management Council Divisions

- Government Affairs
- Human Resources
- Marketing
- Women In Metalcasting
- Future Leaders of Metalcasting

Future Leaders of Metalcasting

Future Leaders of Metalcasting (FLM) is an AFS group that assists in continually developing the next generation of metalcasting leaders through personal development and outreach. Members of FLM are between 20 and 45 years old, and they are on, or aspire to be on, the management track at their organizations. FLM hosts webinars, conferences, and other events aimed at strengthening members' leadership skills, building their workplace acumen, and preparing them for higher-level positions within the metalcasting industry.

Women in Metalcasting

Women in Metalcasting (WIM) is an AFS group that provides a platform for women in the industry to develop avenues for networking, mentorship and the sharing of ideas, experiences, and best practices that will benefit members both professionally and personally. WIM hosts webinars, networking and mentoring events, and programming at CastExpo and Metalcasting Congress. The group also presents the WIM Award for Excellence. Learn more or sign up for the WIM quarterly newsletter at afsinc.org/women-metalcasting.



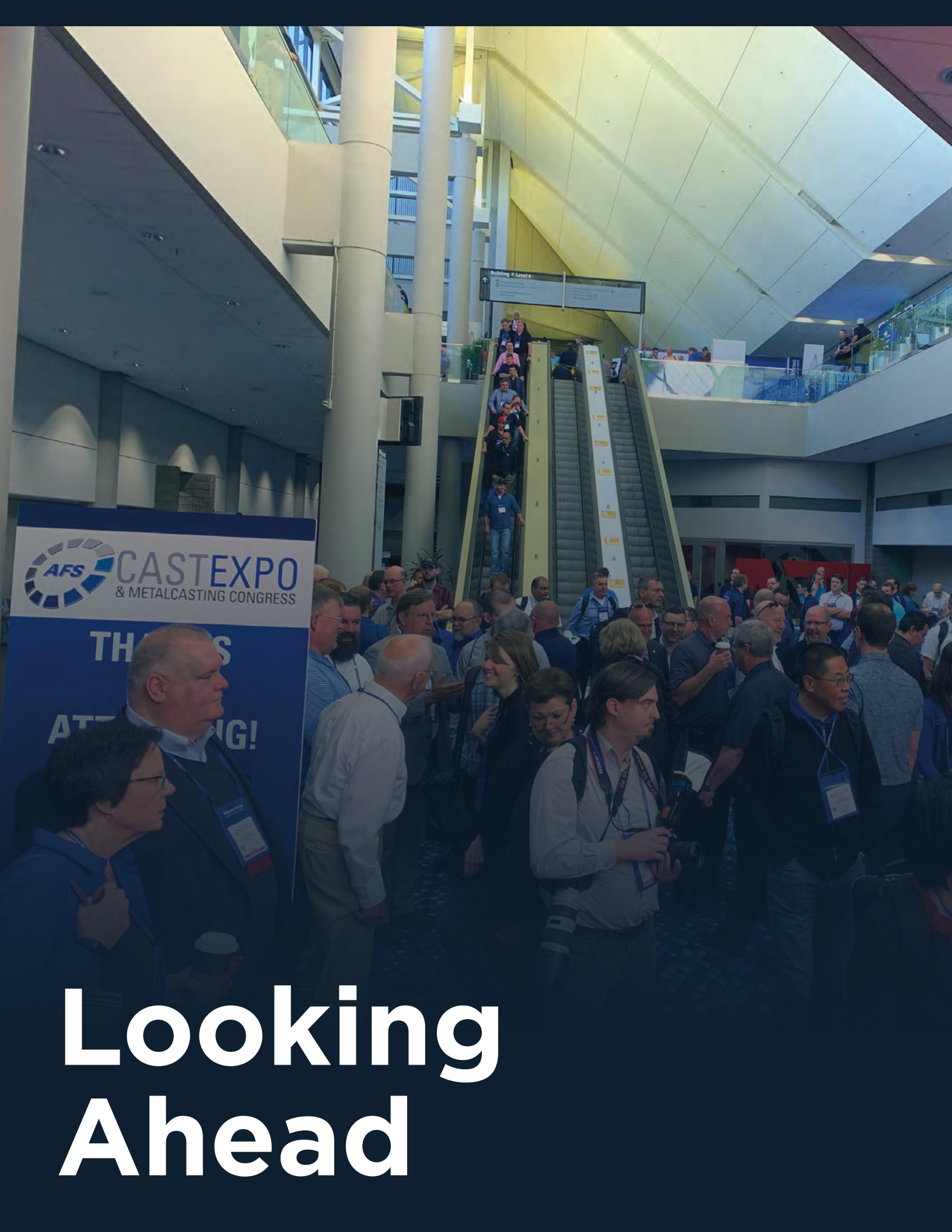
Michelle Ring (American Colloid Co.) discusses work-life balance during a WIM-hosted webinar in March.

Regional Chapters



Throughout North America, AFS's network of Regional Chapters delivers technical expertise, business insights, and networking to members at the local level. Every member can connect with peers in their region by joining one of 39 AFS Chapters. Chapter events include technical and management presentations from local experts, dinner meetings, fundraisers, scholarship nights, plant tours, joint meetings with AFS Student Chapters, and more. To find the chapter closest to you, or to view upcoming events, visit afsinc.org/regional-chapters.

The AFS Western Michigan Chapter does a Foundry-in-a-Box demonstration with students at Oakridge Lower Elementary School in August 2021.



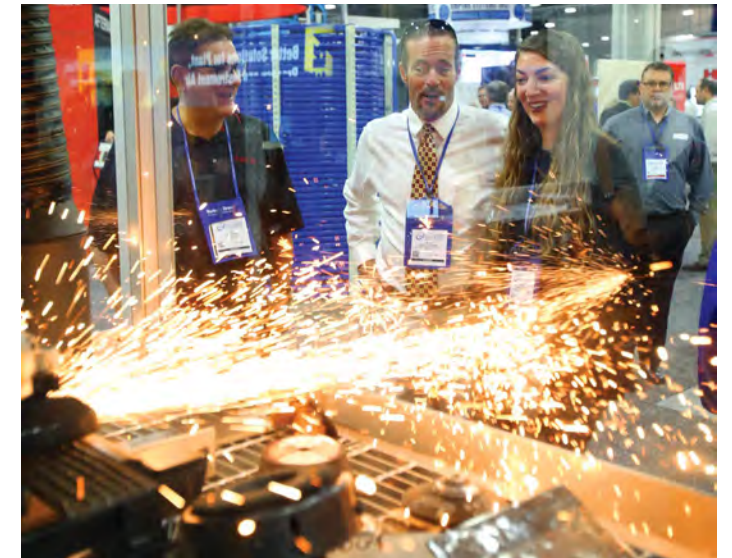
Looking Ahead

CastExpo 2022: Future Directions in Metalcasting

The future is bright for metalcasting, and there's no better place to experience it than CastExpo 2022. For the first time since 2019, North America's largest foundry trade show and congress is returning, live and in person. Coming to Columbus, Ohio, on April 23-26, CastExpo will draw thousands of industry decision-makers, from CEOs to plant managers to engineers, who come to experience full-scale exhibits, watch machinery in action, and make connections with vendors who will push their processes to the next level. Cutting-edge presentations, interactive panels, and lively keynotes complement the action in the exhibit hall.

This year's theme, "Future Directions in Metalcasting," emphasizes the new opportunities that await metalcasters, and many presentations and exhibits will feature emerging technologies, machinery, and research. Worldwide suppliers to the foundry industry, as well as North American metalcasters, are invited to exhibit.

Registration is underway for CastExpo 2022, and AFS members save on admission. To learn more or to sign up, visit castexpo.com.



Above: Live demonstration on the CastExpo 2019 show floor. **Left:** Crowds of people arriving on the first day of CastExpo 2019.

Upcoming AFS Events

Operations and Profitability in Small and Midsize Foundries
Live online | Feb. 14 - 17

CastExpo 2022
Columbus, Ohio | April 23 - 26

2022 Management Training and Development Summit
Schaumburg, IL | May 18 - 20

2022 AFS Government Affairs Fly-In
Washington, D.C. | June 7 - 8

2022 Aluminum Casting Conference
St. Louis, MO | June 14 - 16

2022 Foundry Industry 4.0 Conference
Itasca, IL | July 26 - 27

2022 Sand Casting Conference
Milwaukee, WI | Sept. 12 - 14

2022 Foundry Leadership Summit
White Sulphur Springs, WV | Sept. 18 - 20

Safety 101
Milwaukee, WI | Oct. 2 - 3

34th Environmental, Health & Safety Conference
Milwaukee, WI | Oct. 4 - 6

AFS By the Numbers

125th ANNIVERSARY
Celebration in 2021

942 Corporate
Members



57 Committees, Task
Groups, & Shared
Interest Groups

81
Professional &
Student Chapters

16,000+
Articles in the
AFS Library

f **t** **i**
15,729
SOCIAL MEDIA
FOLLOWERS

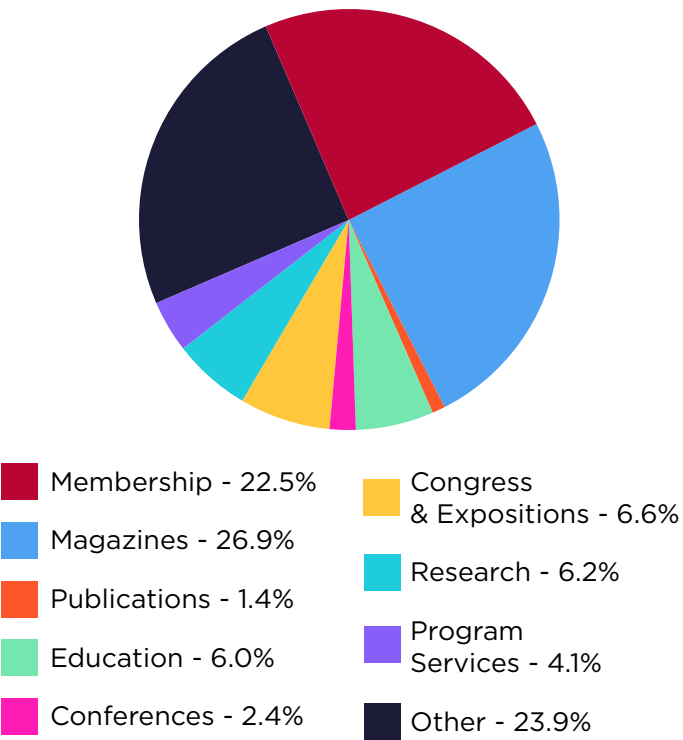
**THIRTY
NINE**
instructor-led
courses
offered by the
AFS Institute

**23 live
webinars**
PRESENTED IN 2021

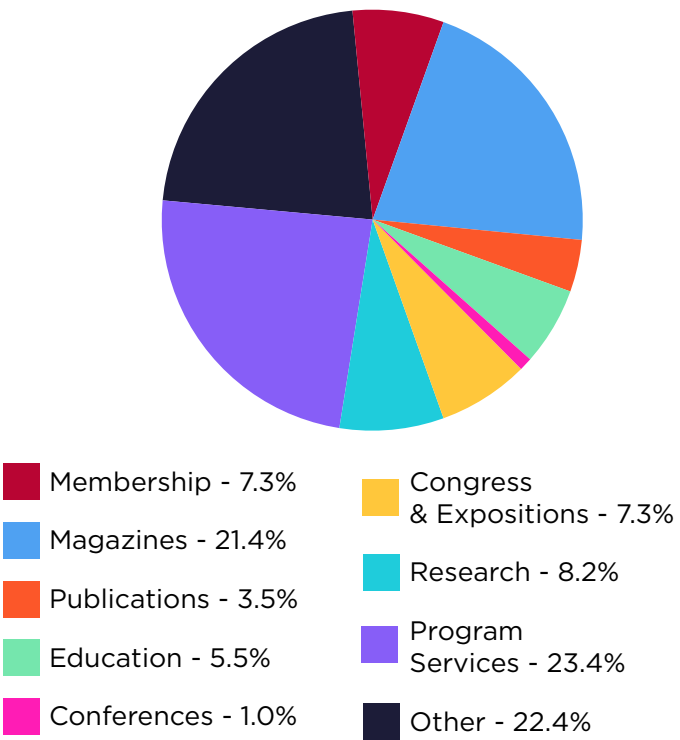
13,000+
Downloads from
the AFS Technical
Library in 2021

2020 - 2021 AFS and the Institute Financials

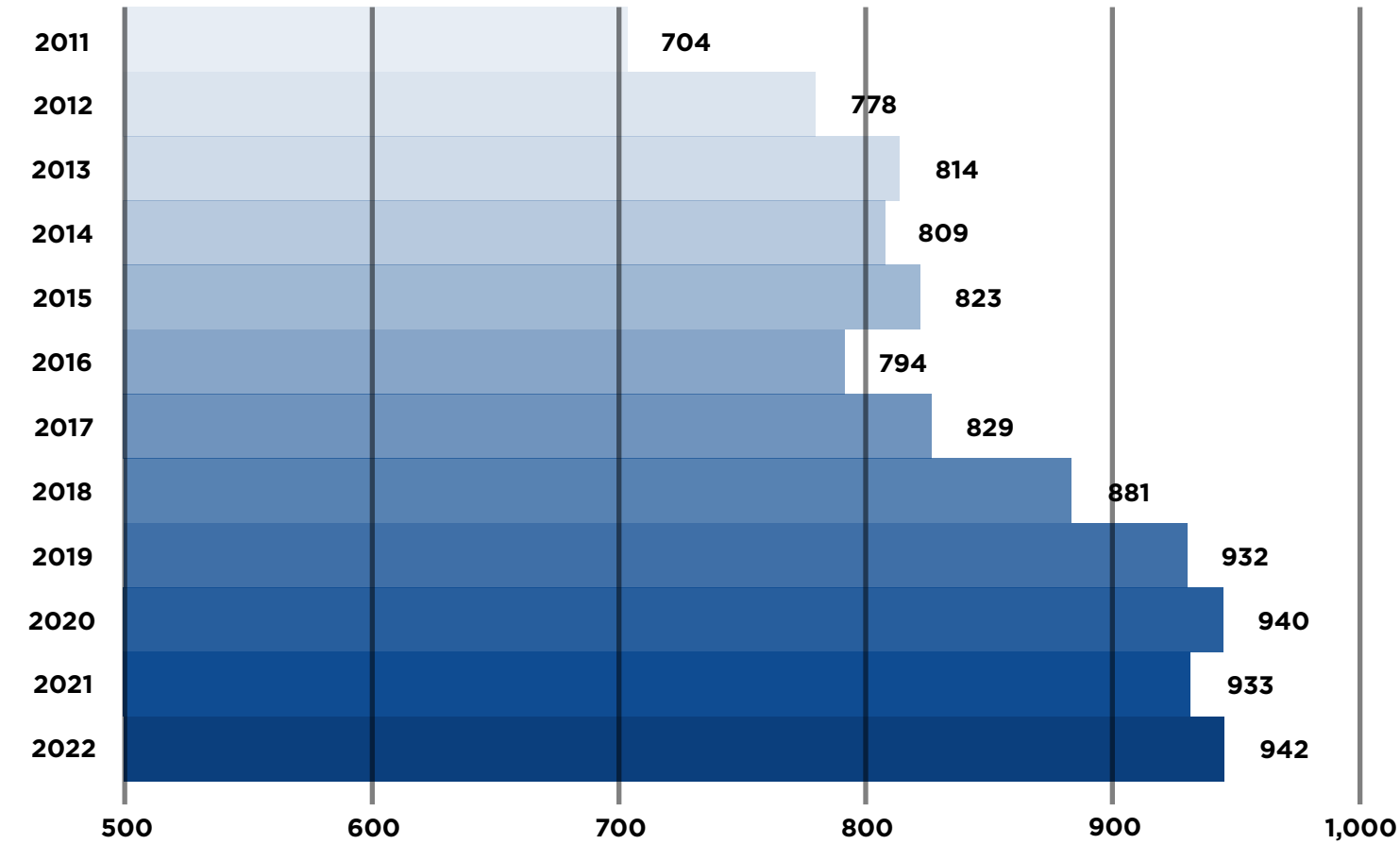
2020 - 2021 Revenue



2020 - 2021 Expenses



2011 - 2022 AFS Corporate Memberships



Vision Statement

AFS will be recognized worldwide by industry stakeholders as the leading voice and resource on technical, management, and advocacy priorities pertaining to the metalcasting industry.

Mission Statement

The mission of the American Foundry Society is to advance the success of its members and the metalcasting industry through advocacy, education, and innovation.

AFS Strategic Plan Goals

Member Success and Sustainability

AFS will provide services, information, and networking opportunities that are vital to the success of individual members, as well as Corporate Member metalcasters, suppliers, and casting purchasers.

Industry Stewardship

AFS will lead outreach activities to enhance the image of the metalcasting industry with target audiences.

Policy Advocacy

AFS will proactively advocate for public policies that benefit U.S. metalcasters, encourage a strong U.S. industrial base, and support national defense.

Promotion of Castings

AFS will advocate for the increased use of castings through the development of new parts and materials, conversions, exports, and reshoring, and will offer resources helping casting purchasers to make wise purchasing decisions.

Workforce Development

AFS and the Institute will lead workforce development initiatives and provide innovative education programs that meet customer needs and increase the skill levels of metalcasting industry workers.

Technical Innovation

AFS will exercise technical leadership in the areas of technology transfer, scholarly publication, cutting-edge research, and technical assistance to drive innovation in the metalcasting industry.

Division Chairs

TECHNICAL DIVISIONS

Technical Council:

David Weiss
VP of Research & Development, Eck Industries, Inc.

Additive Manufacturing Division:

Kirk Rogers
Principal and Founder, M&P Gravity Works LLC

Aluminum & Light Metals Division:

Adam Loukus
Senior Engineer, Loukus Technologies, Inc.

Cast Iron Division:

Eric Nelson
Vice President, Dotson Iron Castings

Copper Alloy Division:

Brent Bowles
Sr. Manager of Manufacturing, Mueller Co.

Engineering & Smart Manufacturing Division:

Brandon Kruse
General Manager, Magaldi Technologies LLC

Environment, Health & Safety Division:

Ray Ostrowski (Unaffiliated)

Lost Foam Division:

Marshall Miller
President, Tesserract4d

Melting Methods & Materials Division:

David Williams
VP of Technology, ASI International Ltd.

Molding Methods & Materials Division:

Peter Gravunder
Foundry Technical Sales, Badger Mining Corp.

Research Board:

Jim Archibald (Retired)

Steel Division:

Robert Tuttle
Professor, Western Michigan University

MANAGEMENT DIVISIONS

Management Council:

Teresa Weber
VP of Talent and Culture, GMT Corp.

Future Leaders of Metalcasting:

Tom Bye
Supply Chain Manager, Dotson Iron Castings

Government Affairs Division:

Eric Meyers
CEO, Oil City Iron Works Inc.

Human Resources Division:

Phil Eatherton
HR Manager, Waupaca Foundry, Inc.

Marketing Division:

Norwin Merens
Marketing Director, Lillian Group Marketing, LLC

Women in Metalcasting:

Sara Timm
Marketing & Communications Manager, Waupaca Foundry, Inc.

2021-2022 Officers & Board Members



President

Michael L. Lenahan
Senior Industrial Sales
Badger Mining Corporation



Vice President

Adam San Solo
Vice President-Infrastructure
Neenah Enterprises



2nd Vice President

Brad Muller
Vice President of Marketing
Charlotte Pipe & Foundry



Immediate Past President

Peter C. Reich
Co-Owner
LAEMPE REICH



CEO

Doug Kurkul
CEO
American Foundry Society

Directors Class 2018-2022



Patrick Carlin
Sales Manager
Superior Aluminum Alloys



David Gilson
Sales and Marketing Director
SinterCast



Sara Joyce
Vice President of Quality and Technical Assurance
Badger Mining Corporation



Jeet Radia
Senior Vice President
McWane, Inc.

Directors Class 2019-2023



Patrick T. Ameen
Vice President Industry Relations
Amsted Rail Company, Inc.



John P. Haas
Plant Manager
Grede



John Lancaster
Plant Director
General Motors



Angela Dine Schmeisser
President and CEO
St. Marys Foundry, Inc.

Directors Class 2020-2024



Rob Johnson
VP Finance, CFO, Treasurer
Waupaca Foundry



Jim Mancuso
Vice President
Mancuso Chemicals, Ltd.



Andrew C. Renkey
President
Harmony Castings/TPI Arcade



Peter Satre
Manager - Corporate Engineering
Allied Mineral Products LLC

Directors Class 2021-2025



Dr. Laura Bartlett
Wolf Associate
Professor of Metallurgical Engineering
Missouri University of Science and Technology



Kiley Eck Hayon
President
Eck Industries, Inc.



Jay M. Morrison
VP of Equipment Sales/Eastern Region Sales Manager
Carpenter Brothers Inc.



Liz Ulman
Vice President
Dotson Iron Castings

AFS Staff

Doug Kurkul
Chief Executive Officer

Finance & Accounting

Chris Oswald
Senior Director of Accounting & Finance

Valerie Stramaglia
Senior Associate Director of Accounting Services

Marketing & Business Development

Ben Yates
Vice President of Business Development

Fabio Cavalieri
Advertising Sales Manager - West

David Kathe
Advertising Sales Manager - East

Katelyn Stanek
Director of Marketing & Communications

Tyler Buchenot
Senior Manager of Creative Services

Shannon Wetzel
Managing Editor

Mike Berrafato
Magazine Art Director

Kimberly Farrugia
Business Development Manager

Government Affairs

Stephanie Salmon
Vice President Government Affairs

Jeff Hannapel
The Policy Group

Human Resources & Administrative Services

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Director of Human Resources & Administrative Services

Tony Perrone
Mailroom/Warehouse Coordinator

Information Technology & Operations

Mike Lakas
Senior Vice President for Information Technology, Operations and Trade Shows

Rich Fett
Information Systems Manager

Katie Matticks
Senior Project Manager

Barbara Jackowski
Customer Service Manager

Carmen Rodriguez
Receptionist/Customer Service

Deana Barrueta
Operations Support and Exhibits Coordinator

AFS Institute

Jennifer Christian
Director of Training Solutions

Technical, Research & Library Services

Brian Began
Vice President of Metalcasting Technical Services

Tom Doré
Technical Director

Kimberly Perna
Senior Technical Coordinator

Bo Wallace
Senior Technical Associate

Sue Thomas
Senior Technical Editor



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