Show Guide

AFS METALCASTING CONGRESS

Momentum in Metalcasting

April 23 – 25, 2024
Milwaukee, WI

metalcastingcongress.org

Produced by the
American Foundry Society

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AFS METALCASTING CONGRESS

April 23 – 25, 2024
Milwaukee, WI

Dear AFS Members and Friends,

On behalf of the American Foundry Society, welcome to Milwaukee and Metalcasting Congress 2024! We are delighted to have you join us for North America's premier foundry industry event.

The theme this year is "Momentum in Metalcasting." You'll see that theme playing out throughout the show. Metalcasting Congress offers one-of-a-kind opportunities for learning, networking, and exploration. I encourage you to engage with the exhibits, attend educational sessions and keynotes, and connect with fellow industry professionals. Building relationships with peers can lead to valuable collaborations and insights that drive innovation in metalcasting.

AFS extends its sincere gratitude to our presenters, volunteers, sponsors, and exhibitors. Your investment in Metalcasting Congress and AFS contributes to the vitality of this event, and indeed, of our whole industry.

If you have any questions or suggestions, please feel free to approach any AFS employee or visit us in The AFS Hub in the exhibit hall. You'll recognize AFS staff by their blue shirts.

Again, thank you for your dedication to metalcasting and for being part of Metalcasting Congress 2024. I wish you a fulfilling and productive experience during your time here.

Warm regards,

Doug Kurkul
CEO, American Foundry Society

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General Information

Locations & Hours

Registration
Foyer – 200 Level

Monday, April 22	4 – 6 p.m.
Tuesday, April 23	7 a.m. – 5 p.m.
Wednesday, April 24	7 a.m. – 5 p.m.
Thursday, April 25	7 a.m. – noon

Exhibit Hall
Hall AB – 300 Level

Tuesday, April 23	8 a.m. – 5 p.m. *(Exhibitors only)*
Wednesday, April 24	9 a.m. – 6 p.m.
Thursday, April 25	9 a.m. – noon

Exhibit Service Center & Other Service Desks
Hall AB – 300 Level

Tuesday, April 23	8 a.m. – 5 p.m. *(Exhibitors only)*
Wednesday, April 24	9 a.m. – 6 p.m.
Thursday, April 25	9 a.m. – noon

Lead Retrieval
Foyer – 200 Level

Monday, April 22	4 – 6 p.m.
Tuesday, April 23	7 a.m. – 5 p.m.
Wednesday, April 24	7 a.m. – 5 p.m.
Thursday, April 25	7 a.m. – noon

AFS Store
Atrium – 200 Level

Tuesday, April 23	7:30 a.m. – 5 p.m.
Wednesday, April 24	7:30 a.m. – 5 p.m.
Thursday, April 25	7:30 a.m. – noon

Keynote Presentations
Ballroom AB – 100 Level

Tuesday, April 23	10:30 – 11:30 a.m.
Wednesday, April 24	10:30 – 11:30 a.m.
Thursday, April 25	10:30 – 11:30 a.m.

Technical & Management Sessions
Rooms: 201AB, 201C, 202AB, 202C, 202DE – 200 Level

Tuesday, April 23	8 a.m. – 4:45 p.m.
Wednesday, April 24	8 a.m. – 4:45 p.m.
Thursday, April 25	8 – 10:15 a.m.

Casting Designers & Buyers Sessions
Hall AB – The AFS Hub – 429 – 300 Level

Wednesday, April 24	9 a.m. – 3:30 p.m.
Thursday, April 25	9 – 9:30 a.m.

AFS Institute Courses
Room: 201DE – 200 Level

Tuesday, April 23	8 – 10:15 a.m. 1:30 – 4:45 p.m.
Wednesday, April 24	8 – 10:15 a.m. 1:30 – 4:45 p.m.
Thursday, April 25	8 – 10:15 a.m.

AFS Show Office, Technical Office, & Speaker Ready Room
Room: 203CD – 200 Level

Monday, April 22	7 a.m. – 6 p.m.
Tuesday, April 23	7 a.m. – 5 p.m.
Wednesday, April 24	7 a.m. – 5 p.m.
Thursday, April 25	7 a.m. – noon

Excellence in Service

The traditional book for registering your years of volunteer service in the metalcasting industry is located in AFS Store. AFS Members who have served the industry for five or more years are invited to register and receive their Volunteer Milestone Pins.

Policy on Audio and Video Recording

AFS reserves the right to any audio and video reproduction of any part of Metalcasting Congress 2024. Recordings (audio, video, still photography, etc.) intended for personal use, distribution, publication or copyright without the express written consent of the association and the individual authors or exhibitors are strictly prohibited.

Minimum Age Restriction

Children under 16 are permitted if accompanied by an adult and with a signed waiver.

Antitrust Policy

The Antitrust Policy Statement of the American Foundry Society is available to anyone attending Metalcasting Congress 2024. Copies are available in the AFS Show Office.

American Foundry Society Code of Conduct

The American Foundry Society invites attendees to participate in AFS conferences, courses, committees and other events in a spirit of collegiality, collaboration, professionalism, and respect as we endeavor to advance AFS's mission—to provide members of the metalcasting supply chain with advocacy support, technical and management education, and access to innovative shared research and technology.

When you attend an AFS event, you agree to the following:

- Treat all attendees—including registrants, guests, speakers, volunteers, exhibitors, staff, service providers, and others in attendance—with respect and consideration.
- Respect the boundaries of others.
- Give permission that AFS can use pictures, videos and audio recordings taken during AFS-related events for AFS promotional purposes. AFS can use your likeness without remuneration.
- Be collegial and collaborative in your discussions, communicating openly and with civil attitudes.
- Respect confidentiality requests from speakers and other attendees. AFS Committee meetings allow for the open exchange of information and are confidential to those in attendance.
- Obey all applicable laws, rules and policies. These include rules and policies of the meeting venue, hotels, or any other site where your AFS affiliation is likely to be displayed.
- Look out for one another. Immediately alert emergency services, meeting or property security personnel, AFS staff, or AFS leadership if you notice someone in distress or see a dangerous or potentially dangerous situation.

Unacceptable behavior at an AFS event includes:

- Physical or verbal abuse of any attendee.
- Being disruptive, stalking, following, threatening, or intimidating anyone.
- Drinking excessively or becoming intoxicated.
- Harassment of any kind, including unwelcome sexual attention and inappropriate physical conduct.
- Making comments or engaging in conduct that is racist, sexist, ageist, or otherwise discriminates against or is offensive to a group or class of people.
- Audio or video recording or taking images of another's presentation, posters, or materials without permission.
- Meetings may be recorded by AFS staff for business purposes. Any recordings or transcription by the participants or through artificial intelligence, present or not, is prohibited.

Contact us to report an incident

If, while at an AFS event, you are personally involved in an incident, or you witness an incident involving others that violates this Code of Conduct, please let AFS staff know about it immediately. You can speak directly with a member of the AFS staff leadership concerning an incident, or you can use a name-optional reporting form that will soon be a part of the AFS website.

If you experience or witness behavior that is an imminent or serious threat to public safety or is a criminal act, you should take action to maintain your own personal safety and contact 911 emergency services immediately.

AFS's Commitment to Quality Member/Attendee Experiences

AFS is committed to providing our members and event attendees with a quality experience. We take any violation of the above standards extremely seriously. AFS reserves the right to bar any person who violates this Code of Conduct from further participation in the event without refund. AFS may also suspend or expel any person who violates this Code of Conduct from AFS membership or from attending or participating in future AFS events.

Special Events

Volunteer Leadership Awards Luncheon

Tuesday, April 23 | 11:45 a.m. – 1:15 p.m.
Room: 102ABCDE – 100 Level | Ticketed Event – $75

Join us for a fun, fast-paced awards luncheon, which combines the former Division Recognition Luncheon and President's Luncheon & Annual Business Meeting. Catch up with friends while AFS officers welcome four new board members. The AFS Technical and Management Division chairs will also present key national and divisional awards including the presentation of the Scientific Merit and Service Citation awards.

Annual Reception & Banquet

Tuesday, April 23 | Cashless bar reception 6 – 7 p.m.
Hilton Milwaukee City Center - Crystal Ballroom

Banquet 7 – 9 p.m. | Hilton Milwaukee City Center – Crystal Ballroom | Ticketed Event - $135

Join us for business networking and the presentation of the highest AFS honors, the Gold Medals. The cashless bar opens at 6 p.m. The awards presentation and banquet start at 7 p.m. The President's After-Party starts at 9 p.m. Recommended dress is business formal.

Women in Metalcasting Breakfast

Wednesday, April 24 | 7:30 – 9 a.m.
Room: 102ABCDE – 100 Level | RSVP required

This event is open to members of Women in Metalcasting. It includes a continental breakfast, networking, and the presentation of the 2024 Women in Metalcasting Award for Excellence. For more information or to RSVP for this event, contact WIM liaison Katie Matticks at kmatticks@afsinc.org.

Sponsored by:

Past Presidents' Luncheon

Wednesday, April 24 | 11:30 a.m. – 1:30 p.m. | Capital Grille
Must be a previous AFS President to attend

The annual gathering for all past AFS Presidents.

Exhibit Floor Reception

Wednesday, April 24 | 4:30 p.m.
Hall AB – 300 Level | Open to all attendees

Attendees are encouraged to mingle on the exhibit floor with exhibitors. Enjoy appetizers and refreshments.

Young Professionals Reception

Wednesday, April 24 | 5 – 6 p.m.
103CD – 100 Level | Open to all attendees

Join members of the AFS Young Professionals and other industry professionals for a fun networking event for rising leaders. No prior registration necessary. All attendees are welcome. For more information, contact AFS Young Professionals liaison Cathy Potts at cpotts@afsinc.org.

Sponsored by:

Alumni Dinner

Wednesday, April 24 | 6 – 9 p.m. | Harley-Davidson Museum
Must be a member of AFS Alumni to attend
Ticketed Event - $145

Alumni will experience the Harley-Davidson Museum, touring the vast collection of Harley-Davidson motorcycles and rare memorabilia. A shuttle bus will be available to transport Alumni to and from the event. Shuttle bus will be located at the Wells Street entrance at 5:30 p.m. Departure at 5:45 p.m. *Must be AFS Alumni to attend.*

Copper Division Breakfast

Thursday, April 25 | 7 a.m. | Ticketed Event – $65
100 Level – Room: 102ABCDE

The Copper Division will present their annual awards during this breakfast, which is open to everyone with an interest in copper alloys.

The AFS Hub

Booth 429

The AFS Hub is a dedicated area for connecting with AFS staff and other attendees. Visit the AFS Hub to enjoy a cup of coffee, or charge your phone while networking with peers. This area also features AFS Products & Services, Casting of the Year winners, the SFSA Casting Dreams Competition, and sessions for the Casting Designers & Buyers Track.

Casting Designers & Buyers Track

Casting Designers & Buyers Track sessions run Wednesday and Thursday in the Casting Source Theater at the AFS Hub. These sessions are available to all Metalcasting Congress 2024 attendees.

The Casting Source Theater is sponsored by:

AFS Hub Powered Tables sponsored by:

IJMC/FEF Student Research Competition

Wednesday, April 24 | 11:45 a.m. – 12:45 p.m.

The IJMC/FEF Student Research Competition empowers top undergraduate college students to showcase their metalcasting research projects at Metalcasting Congress. Winners earn scholarships and are published in the International Journal of Metalcasting. All submissions are judged by a leading panel comprised of the AFS Research Board and officers of the AFS Technical Council. Up to $4,000 in total scholarships will be awarded.

The AFS Store

Atrium – 200 Level

The premier bookseller for people in the metalcasting industry. Practical and technical publications will be on hand, along with signature clothing and gift items.

Keynote & Hoyt Lecture Speakers

Tuesday, April 23, 10:30 – 11:30 a.m.

Leadership in Uncertain Times

Mike Pompeo
70th U.S. Secretary of State, 6th CIA Director, and Executive Chairman at Impact Investments

Join us for a fascinating keynote by Mike Pompeo, the remarkable American leader who has held the roles of both U.S. Secretary of State and CIA Director. His talk on "Leadership in Uncertain Times" is guaranteed to captivate attendees and deliver an important message for the metalcasting industry.

Pompeo's journey includes graduating top of his class at West Point, leading troops along the Iron Curtain, and earning a degree from Harvard Law School. He transitioned from aerospace and energy to Congress and later became the nation's most senior spy when he took the helm of the CIA. As the 70th Secretary of State, he championed American values and prioritized the nation's interests.

During his tenure as Secretary of State, the U.S. became a significant energy exporter, achieved a milestone in the Middle East through the Abraham Accords, and hosted the largest human rights gatherings at the State Department. Pompeo is also the author of "Never Give an Inch: Fighting for the America I Love."

Wednesday, April 24, 10:30 – 11:30 a.m.

Hoyt Memorial Lecture: Embracing Adversity – Mining the Riches from Life's Challenges

Mike Lenahan
AFS Past President; Executive Vice President - Industrial Sales, Badger Mining Corp.

Life is unpredictable and often presents significant challenges and hardships. These challenges and hardships do not determine our ultimate destination, but rather give us an opportunity to grow and find new meaning. Adversity often allows us to expand our vision, renew and restore our appreciation, and develop new skill sets to thrive.

Mike Lenahan is Executive Vice President - Industrial Sales at Badger Mining Corporation. A graduate of Bowling Green State and Notre Dame, Lenahan started his career at Sand Products of Cleveland in 1987. He has since become an expert on foundry sands and foundry recycling, having authored multiple papers on both topics. Lenahan is a Past President of AFS. He has been an active member of several AFS chapters and is a past chair of the EHS Division and Government Affairs Division. Lenahan also has served on the board of the Ohio Cast Metals Association and as secretary-treasurer of the Foundry Association of Michigan.

Thursday, April 25, 10:30 – 11:30 a.m.

Successful Succession Strategies for Manufacturers of Every Size

Meridith Elliott Powell
Business Growth Strategist and Author of "Who Comes Next: Leadership Succession Planning Made Easy"

Meridith Elliott Powell is an award-winning author, keynote speaker, and business strategist. With a background in corporate leadership and sales, her career expands over several industries, including banking, healthcare, and finance. Powell worked her way up from entry-level jobs to earn her position in the C-Suite.

She is a member of the Speaker Hall of Fame, Vice Chair of the National Speakers Association, a Master Certified Business Growth Strategist, a Certified Executive Coach, and a Certified Speaking Professional. In addition, Powell is an invitation-only author for LinkedIn, with more than 600,000 learners taking her courses around the world.

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Schedule at a Glance

Tuesday, April 23	Wednesday, April 24	Thursday, April 25
7 a.m. – 5 p.m.	**7 a.m. – 5 p.m.**	**7 a.m. – noon**
Registration Open	Registration Open	Registration Open
7:30 a.m. – 5 p.m.	**7:30 a.m. – 5 p.m.**	**7 – 8 a.m.**
AFS Store Open	AFS Store Open	Copper Division Breakfast (Ticket required)
8 a.m. – 4:45 p.m.	**7:30 – 9 a.m.**	**7:30 a.m. – noon**
Technical & Management Sessions	Women in Metalcasting Breakfast (RSVP required)	AFS Store Open
8 – 10:15 a.m.	**8 a.m. – 4:45 p.m.**	**8 – 10:15 a.m.**
AFS Institute Course: Metalcasting Process Basics	Technical & Management Sessions	Technical & Management Sessions
8 a.m. – 5 p.m.	**8 – 10:15 a.m.**	**8 – 10:15 a.m.**
Exhibitor Set-up	*AFS Institute Course:* Intro to Supervisor Development: An Overview (Part 1)	AFS Institute Course: Casting Material Properties
10:30 – 11:30 a.m.	**9 a.m. – 6 p.m.**	**9 – 9:30 a.m.**
Keynote Speaker: 70th Secretary of State Mike Pompeo	Exhibits Open	*Casting Source Theater Presentation:* From the Publication: Equipping Engineering to be Effective
11:45 a.m. – 1:15 p.m.	**9 – 9:30 a.m.**	**9 a.m. – noon**
Volunteer Leadership Awards Luncheon (Ticket required)	AFS Newcomer Welcome	Exhibits Open
1:30 – 4:45 p.m.	**9:30 – 10:15 a.m.**	**10:30 – 11:30 a.m.**
AFS Institute Course: Getting Creative with SPC (Statistical Process Control)	*Casting Source Theater Presentation:* Data-Driven Design Properties for Cast Carbon Steels	Keynote Speaker: Meridith Elliott Powell
6 – 7 p.m.	**10:30 – 11:30 a.m.**	**noon**
Annual Banquet Reception (Cashless bar)	Hoyt Memorial Lecture: Mike Lenahan	Metalcasting Congress 2024 Concludes
7 – 9 p.m.	**11:45 a.m. – 12:45 p.m.**	
Annual Banquet (Ticket required)	IJMC-FEF Student Technical Research Contest	
9 – 10 p.m.	**1:30 – 4:45 p.m.**	
President's After-Party (Cashless bar)	*AFS Institute Course:* Intro to Supervisor Development: An Overview (Part 2)	
	1 – 1:45 p.m.	
	Casting Source Theater Presentation: Surface Finish	
	2 – 2:45 p.m.	
	Casting Source Theater Presentation: Update on AFS Project for Digitizing Various Knowledge Platform	
	3-3:30 p.m.	
	Casting of the Year	
	3 – 3:30 p.m.	
	SFSA's Casting Dreams	
	3:45 – 4:10 p.m.	
	Casting Source Theater Presentation: Workforce Development in Metalworking and Defense Manufacturing	
	4:30 p.m.	
	Exhibit Floor Reception	
	5 – 6 p.m.	
	Young Professionals Reception (RSVP required)	
	6 – 9 p.m.	
	AFS Alumni Dinner (AFS Alumni only. Ticket required)	

Schedule is subject to change.

2024 Show Schedule

Tuesday, April 23, 2024

7 – 8 a.m.

Room: 103CD – Level 100

Author Chair Breakfast

This breakfast is for AFS speakers, session chairs, students and staff to meet and coordinate details for the day's educational sessions.

7 a.m. – 5 p.m.

Foyer – Level 200

Registration Open

7: 30 – 10:30 a.m.

Foyer – Level 200

Coffee Station by Registration and AFS Technical and Management Sessions

Coffee sponsored by:

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7: 30 a.m. – 5 p.m.

Atrium – Level 200

AFS Store Open

8 – 9 a.m.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chairs:

Herbert Doty
General Motors, Fenton, MI

Adam Kopper
Brunswick Corp., Fond du Lac, WI

The Effect of Coating Type on Extraction Loads for Steel Core Pins in Aluminum Permanent Mold Castings (24-008)

Stephen Midson, Colorado School of Mines, Golden, CO

An investigation has been performed to determine if permanent PVD coatings applied to critical portions of a casting die could be beneficial for aluminum permanent mold casting, thereby enabling the reduction of the need for conventional lubricants. A laboratory test has been fabricated to provide a quantitative measurement of the force needed to extract a core pin from solidified aluminum alloys. The test involves pouring molten aluminum alloy A356 into a crucible containing a tapered H13 steel core pin, and once the alloy has cooled to 400 deg-C, a tensile testing load cell is used to monitor the load necessary to extract the pin. Five different conditions have been examined, including a bare (un-coated) steel pin, sprayed graphite and boron nitride coatings, a silicon-doped DLC, and an AlCrN coating. The measured extraction loads and load-time curves will be reviewed, along with the surface condition of the pins after extraction.

Thermal Management of Molds *(24-027)*

Diran Apelian, Carl Soderhjelm, and Cheolmin Ahn, University of California-Irvine, Irvine, CA

Thermal management plays a pivotal role in the production of high-quality castings and the reduction of production cycle time by ensuring desired solidification patterns during dynamic casting processes such as in permanent mold and die casting processes. These processes require rapid heat removal and careful heat recovery for subsequent casting cycles, unlike traditional batch processes. Moreover, thermal management in specific localized regions of the mold are needed due to diverse mold geometries and shapes, as well as applications such as in gigacasting. Various thermal technologies were evaluated quantitatively through both modeling and experiments. considering analyses of kinetic, heat flux, and heat transfer coefficients. Moreover, the development of self-regulating molds incorporating phase change materials (PCMs) shows promise in leveraging the latent heat of PCMs for local heating and cooling during the dynamic casting process. These will be reviewed and discussed.

Cast Iron Division

Room: 202DE – Level 200

Session Chair:

David Gilson
SinterCast Inc., Brookfield, WI

Cast Iron Honorary Lecture: Powertrain Trends – The Outlook for Cast Iron *(24-163)*

Steve Dawson, SinterCast Ltd., Sunninghill, Berkshire, United Kingdom

With the united will of international governments, media, compliant industry and consumers, it seems inevitable that passenger cars are destined for electrification. The only question is the speed. But where are the trucks going? Full-size pick-ups are currently navigating the onset of electrification, but the initial results can best be described as a setback; both for OEM finances and for the electrification movement. In the Super Duty sector, OEM's continue to inject billions into long term manufacturing facilities for the profitable internal combustion engines that finance their electrification programs. The prospects don't become easier as we step up the food chain to long-haul heavy-duty trucks. Even in Europe, electric truck penetration remains below 1%. With growing concerns for range, total cost of ownership and the roll-out of refueling / recharging infrastructure, the trucking industry is beginning to contemplate alternative fuels rather than alternative powertrains. The debate is evolving from engines to energy. The presentation will provide an outlook for automotive powertrains in the US, Europe and Asia, and therefore, an outlook for the future demand for cast iron cylinder blocks and heads.

Engineering & Smart Manufacturing Division

Room: 201AB – Level 200

Session Chair:

Francois Audet
Foundry Solutions Metallurgical Services Inc., Quebec, Canada

Silver Anniversary Lecture: Thirty Years after QS-9000: Changing Requirements and Enduring Lessons *(24-097)*

Ted Schorn, Enkei America Inc., Columbus, IN

Ford, GM and Chrysler first published their automotive quality system standard in August of 1994. During the 1999 Casting Congress, paper 99-20 was presented, titled "Keeping the QS-9000 Process Alive: Strategies After Certification." This paper provided advice regarding the proper application and implementation of a quality system that was mandated by the "Big Three" automotive OEMs at the time. This silver anniversary paper reviews the history of development and change in quality management systems over the last thirty years since QS-9000 was initially published. In this review the author offers insight into the abiding themes and enduring lessons for organizations seeking to make quality system certification value added.

Melting Methods & Materials Division

Room: 201C – Level 200

Session Chair:

Pat Leper
Saveway USA Corp., North Canton, OH

Green Sand Molding Committee and EJ Experiences in Development & Implementation of Digital Active Clay Testing (24-194)

Andy Bain, Ford Meter Box Co. Inc., Carmel, IN; Morgan Kent, Saint-Gobain Ceramics & Plastics, Worcester, MA

This panel will provide an experienced introduction to automatic mold pouring for ferrous and non-ferrous foundries. Refractory selection and channel loop designs will be presented along with the conversion from ladle pouring to automated pouring and operating a coreless furnace-based pouring system.

- **Transitioning from Ladle Pouring to Pressure Pouring Brass (24-159b)**
  Andy Bain, Ford Meter Box Co. Inc., Carmel, IN

- **Pressure Pour Furnace Relining Methods: Pros, Cons and Loop Designs (24-159c)**
  Morgan Kent, Saint-Gobain Ceramics & Plastics, Worcester, MA

Molding Methods & Materials Division

Room: 202C – Level 200

Session Chair:

Tom Arenholz
Simpson Technologies Corp., Cedar Falls, IA

Digital Active Clay Measurement in Green Sand *(24-022)*

James Springstead, Piao Tan, and Sam Ramrattan, Western Michigan University, Kalamazoo, MI; Brian Rachwitz, EJ, East Jordan, MI; Michelle Ring, Ductile Iron Society, Carmel, IN; Stephen Neltner, REFCO-TEC, Orrville, OH; Tom Arenholz, Simpson Technologies Corp., Aurora, IL; Scott Outman, Metal Technologies Inc., Three Rivers, MI

The measurement of active clay in foundry green sands is an essential component in the control of the metal casting process. A new spectrophotometric test has been developed that offers a fast, qualitative measurement for active clay in green sands that does not require extensive training and experience. In this study, this new test is optimized and evaluated at three working foundries to determine viability as an alternative measurement of active clay in working foundry green sands. The variance of the optimized methods has been reviewed relative to the traditional methylene blue test using comparison within each foundry and a gage repeatability and reproducibility test. Furthermore, the new test offers a quantitative alternative to the traditional methylene blue test that is ideal for implementation in working foundries and automation in the future.

Green Sand Molding Committee and EJ Experiences in Development & Implementation of Digital Active Clay Testing (24-194)

Brian Rachwitz, EJ, East Jordan, MI

Experiences of the Green Sand Molding Committee's involvement in development of this new procedure will be presented. The presentation will also focus on an overview of real foundry experiences implementing and transitioning to the new Digital Active Clay Test procedure and a replacement for the Methylene Blue Active Clay Test. Lessons learned and helpful tips based on EJ experiences in converting to this new procedure will be reviewed.

Schedule is subject to change.

8 – 10:15 a.m.

The AFS Institute

Room: 201DE – Level 200

Metalcasting Process Basics *(24-134)*

Mike Porfilio, Stainless Foundry & Engineering Inc., Milwaukee, WI

This course provides participants with a basic overview of the metalcasting process. Students will trace the path of a casting from quoting through shipping. Common metalcasting terms are covered while highlighting the activities inside the major departments of a metalcasting production facility.

8 a.m. – 5 p.m.

Hall AB – Level 300

Exhibitor Set-up

9:15 – 10:15 a.m.

Additive Manufacturing Division

Room: 202DE – Level 200

Session Chair:

Jerry Thiel
University of Northern Iowa, Cedar Falls, IA

Silver Anniversary Lecture: A Quarter Century of Change in Printing Molds and Cores, An Evolution from the Direct Shell Production Casting Process *(24-068)*

Kelley Kerns, HA-International, LLC, Westmont, IL

Additive manufacturing technologies emerged over 25 years ago with a technology known as Direct Shell Production Casting (DSPC) emerging as a viable process directly produce molds with in-situ cores to directly pour castings direct near-net shape parts. Innovation evolution has taken a fast track in 3D printing of cores and molds. This paper will review the generational developments in process technology, applications, materials, and adoption of the 3D printing in the metal casting industry.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chair:

Luke Schimmel
Fairbanks Morse Engine, Brodhead, WI

Fundamentals of Ultrasonic Treatment of Molten Aluminum *(24-028)*

Raquel Jaime, University of California-Irvine, Irvine, CA; Diran Apelian and Carl Soderhjelm, Advanced Casting Research Center, Irvine, CA; Hélder Puga, University of Minho, Guimarães

Traditionally, molten aluminum requires various processing techniques prior to casting such as degassing to reduce porosity, filtration to reduce inclusion content, the addition of grain refiners to refine the grain structure, and the addition of chemical modifiers to alter the morphology of eutectic phases. The conventional techniques used for these purposes require the extensive use of purge gases and chemical additions. Ultrasonic Treatment (UST) is a novel processing method through which ultrasonic energy is introduced into molten metal for the purpose of modifying the cast microstructure. To optimize the efficiency of UST, it is necessary to examine the fundamental mechanisms and the solidification behavior of the metal under ultrasonics. The mechanisms of ultrasonic energy within molten metal will be discussed alongside how they influence specific applications without the use of external gases or chemical additions.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chair:

Luke Schimmel
Fairbanks Morse Engine, Brodhead, WI

Method to Develop the Reduced Pressure Test (RPT) for Consistent Reliability and Accuracy for Everyday Foundry Operation – A Review *(24-103)*

Robert Mackay and Glenn Byczynski, Nemak US/CAN Business Unit, Windsor, ON

The Reduced Pressure Test (RPT), also called the Vacuum Density Test (VDT), Vacuum Solidification Test (VST) or the original Straube-Pfeiffer test, has been used widely to gauge the porosity level of the castings to be manufactured. The size of the aluminum casting market in the US is 11.2B USD in 2021 and much of that industry relies on the low cost and effective RPT to validate metal quality before casting. However, there can be many pitfalls in conducting the RPT due to incorrect casting of the RPT test sample and during interpretation of the results in terms melt and casting quality. This manuscript will review best practices that can support not only industry but academic institutions to incorporate the RPT more effectively towards their work.

Melting Methods & Materials Division

Room: 201C – Level 200

Session Chair:

Alex Croll
Waupaca Foundry Inc., Tell City, IN

Cupola Case Study: Successful SiC Precast Brick Shape Melt Zone Lining Installation with Significant Efficiency and Cost Improvements *(24-158)*

David Kasun, ATD Engineering & Machine, Au Gres, MI; Angelo Petruccelli, Allied Mineral Products, Hamilton, ON; Eric Gokey, Cadillac Casting, Cadillac, MI

A case study will be presented for a cupola shell replacement project upgrade, that included the installation of SiC Precast Brick Shapes with high abrasion thermal and chemical resistance. Careful attention to tuyere design parameters and subsequent disciplined regulation of Blast/Oxygen rates, has resulted in substantially reduced heat losses to the melt zone shell and refractory life that is approaching two to three years. The resultant cupola efficiency increase, reduced coke rates, and low refractory repair costs have resulted in substantial cost savings and GHG emission reductions. This presentation will be presented for an anonymous cupola plant.

Low CRI, High CSR Coke Trials – AFS Sponsored Research *(24-090)*

Bruce Blatzer, Cary, NC; Stephen Hay, Hay Melting Solutions LLC, South Lyon, MI

To improve coke performance in the cupola, the authors discovered that coke used in blast furnaces (Low CRI, High CSR) exhibits higher strength than foundry coke and may provide better performance due to larger coke pieces reaching the melt zone. Coke strength and sizing are extremely important in a cupola because the coke must reach the melt zone intact, stay in the melt zone long enough to replenish the coke bed, provide heat for melting and carbon pick-up to the liquid iron. This research evaluates the cupola performance difference between cokes of high and low CRI. In addition, efforts were made to identify differences in characteristics of these cokes.

Schedule is subject to change.

Steel Division

Room: 202C – Level 200

Session Chair:

Robert Tuttle
Western Michigan University, Kalamazoo, MI

Cooling Curves of Concentrated Alloys, Steelmaking Slag, and Lithium Iron Phosphate *(24-017)*

Delin Li, CanmetMATERIALS, Natural Resources Canada, Hamilton, ON

Over the past few years, a variety of melting casting projects have been carried out, in collaboration with industries and universities. Concentrated alloys and non-metallic compounds were studied including high-Si cast iron, high-Mn steel, Al-added stainless steel, high-entropy alloy, Permalloy 80 Ni alloy, Stellite Co alloy, steelmaking slag and lithium iron phosphate (LFP). A melt synthesis of LFP was developed. Cooling curves were measured using the thermal analysis (TA) cup method and differential thermal analysis (DTA). In addition, the phase diagrams of alloys were calculated using Thermo-Calc. This paper draws on some examples of the measured cooling curves to illustrate the thermal behaviors of melts, along with a quick review of each project.

A Theoretical and Experimental Approach to Hot Tear Prediction in Steels *(24-006)*

Robert Tuttle and Demetrios Cortez, Western Michigan University, Kalamazoo, MI

Steel alloy development continues to provide opportunities for foundries to enter new markets. However, traditional approaches to alloy development leave the examination of manufacturing issues for the later stages of development. Bringing casting considerations earlier in the development cycle should save money and time bringing new alloys to market. The hot tearing tendency of an alloy can be predicted during the early stages of alloy design. A hot cracking index was used to compare hot tearing tendency in both previous research and from experiments poured as part of this work. Cone castings were employed to create hot tears in three different alloys. The index predicted the same pattern as the observed hot tears. Interestingly, the freezing range also correlated with the hot tearing tendency of the steels. Therefore, it appears that the hot tearing behavior of an alloy can be predicted during the early alloy development stage.

10:30 – 11:30 a.m.

Keynote

Room: Ballroom AB – Level 100

Leadership in Uncertain Times *(24-128)*

Mike Pompeo, 70th U.S. Secretary of State, 6th CIA Director, and Executive Chairman at Impact Investments

Join us for a fascinating keynote by Mike Pompeo, the remarkable American leader who has held the roles of both U.S. Secretary of State and CIA Director. His talk on "Leadership in Uncertain Times" is guaranteed to captivate attendees and deliver an important message for the metalcasting industry.

Pompeo's journey includes graduating top of his class at West Point, leading troops along the Iron Curtain, and earning a degree from Harvard Law School. He transitioned from aerospace and energy to Congress and later became the nation's most senior spy when he took the helm of the CIA. As the 70th Secretary of State, he championed American values and prioritized the nation's interests.

During his tenure as Secretary of State, the U.S. became a significant energy exporter, achieved a milestone in the Middle East through the Abraham Accords, and hosted the largest human rights gatherings at the State Department. Pompeo is also the author of "Never Give an Inch: Fighting for the America I Love."

11:45 a.m. – 1:15 p.m.

Room: 102ABCDE – Level 100

Volunteer Leadership Awards Luncheon

Join us for a fun, fast-paced awards luncheon, which combines the former Division Recognition Luncheon and President's Luncheon & Annual Business Meeting. Catch up with friends while AFS officers welcome four new board members. The AFS Technical and Management Division chairs will also present key national and divisional awards including the presentation of the Scientific Merit and Service Citation awards. *Ticketed Event - $75*

1:30 – 3 p.m.

Additive Manufacturing Division

Room: 202AB – Level 200

Session Chair:

Dave Rittmeyer
Matthews Additive Technologies, Pittsburgh, PA

Comparing Thermo-Mechanical Anisotropy in Disc-Shaped Specimens: A Case of 3D Printed Silica Sand and Ceramic Sand *(24-059)*

Sam Ramrattan, Lee Wells, and Shantanu Phalke, Western Michigan University, Kalamazoo, MI; Peter Nakachima, Sintex Minerals & Services Inc., Rosenburg, TX

The purpose of this study is to compare the thermo-mechanical properties of a natural round grain silica sand and a synthetic ceramic sand. The two sands will be 3D printed in separate build boxes to produce disc-shaped specimens. Specimens are processed within a model where binder is applied to sand horizontally and vertically. The print orientation has a significant effect on longitudinal and radial displacement, and heat transfer properties. This indicates that 3D printed specimens have anisotropic characteristics caused by print orientation, which could result in unanticipated dimensional changes that lead to part rejection. Moreover, there are significant differences in thermal distortion measurements between the natural and synthetic media. Thermal distortion curves showing the anisotropic characteristics between silica and ceramic sands are provided.

Updates on Advancing Developments for 3D Consumables - Resin Systems, Mold Coatings, Additives and Printhead Cleaners *(24-153)*

Kelley Kerns, HA-International, LLC, Westmont, IL

As 3D additive technology advances, so do the performance expectations on the consumables used in the 3D Sand Printing Process. We'll cover the latest in resin technology, including IOB, coatings (surface smoothing), improved de-sand ability and sand additives that are available.

Cast Iron Division

Room: 202DE – Level 200

Session Chairs:

Kramer Pursell
Metal Technologies Auburn Casting Center, Columbia City, IN

Mike Riabov
Elkem Silicon Products, Appleton, WI

Observation of Flake Graphite Nucleation and Growth in Gray Iron through Interrupted Solidification and Inclusion Analysis *(24-122)*

James Liggett, Mingzhi Xu, and Jingjing Qing, Georgia Southern University, Statesboro, GA

Solidification and cooling of a hypoeutectic gray cast iron were interrupted at various stages by quenching the iron sampled with custom-made quartz molds in iced brine. The microstructure evolutions of the gray iron were interrupted and retained by quenching. A scanning electron microscope equipped with energy dispersive X-ray spectrometry and Automated Feature Analysis Software was used to characterize the flake graphite and non-metallic inclusions. Based on the area and perimeter information obtained, length and thickness of flake graphite in various stages of solidification and cooling were achieved. Growth rates of type A graphite along the prismatic and basal directions during eutectic reaction were determined as 1.4 μm/s and 0.02 μm/s respectively. Inclusion analysis indicated the significant role of manganese containing sulfide and oxysulfide inclusions on nucleating graphite in gray iron.

Comparison of Microstructure and Non-Metallic Inclusions in Top-Filled and Bottom-Filled Gray Iron Castings *(24-130)*

Evan Carter, Jingjing Qing, and Mingzhi Xu, Georgia Southern University, Statesboro, GA

A bottom-filled rigging system was designed to produce gray iron castings, which was compared with a top-filled design in the present study. Filling and solidification of gray iron produced with the bottom-filled mold were compared with that for the top-filled mold. At similar cooling rate and solidification condition, the count of Type A graphite flakes was greater in the bottom-filled casting, while its graphite flakes were also finer in size. In addition, the statistical analysis of non-metallic inclusions using a scanning electron microscope equipped with Auto Feature Analysis software also showed differences in inclusion composition, size, and population density between two castings. The results indicated that the filling turbulence promoted interactions between metal with air, which in turn influenced the formations of non-metallic inclusions. As a result, this impacted the nucleation of flake graphite in the gray iron.

Influence of Niobium on the Microstructure of Hypereutectic Gray Cast Iron *(24-016)*

Gorka Alonso, Iker Asenjo, and Beñat Bravo, AZTERLAN, Basque Research and Technology Alliance (BRTA), Durango, Basque Research and Technology Alliance (BRTA), Durango; Dr. Doru Stefanescu, The Ohio State University and University of Alabama, Dublin, OH; Ramon Suarez, Veigalan Estudio 2010, Durango

The final properties of grey cast iron depend on graphite morphology. Additions of certain trace elements can improve or degrade these properties for constant carbon level. The goal of this research was to investigate the effect of different levels of niobium on the microstructure and nucleation propensity for hypereutectic gray cast irons. Cooling curves were recorded, and metallographic analysis was conducted on thermal analysis inoculated cups. It was found that niobium additions alter significantly the solidification process, modifying the morphology, type and size of graphite, the number of eutectic cells and the perlite spacing. These effects are more evident as the content of niobium increases. Early precipitation and growth of kish graphite (type C) seems to be reduced. Mn sulfides nucleating on complex oxides were detected as the main nuclei through SEM study. The formation of NbTi particles is directly related to the Nb content.

Engineering & Smart Manufacturing Division

Room: 201C – Level 200

Session Chair:

Nick Knotts
Temperform Corp., Oxford, MI

Why Industry 4.0? Connecting Inputs to Assessments to KPIs to Business Value *(24-101)*

Todd Hutcheson, University of Northern Iowa, Cedar Falls, IA

Assessments designed to identify I4.0 implementation opportunities are commonplace. While many assessments are available, most have issues like ease of use, difficulty gathering honest inputs, disconnects between results and business value. This presentation focuses on I4.0's assessment "what", and includes the "why" (KPIs, savings opportunities, efficiency gains, culture improvements, etc.) and the "how" (the creation of plans leveraging AI/ML to assure the highest value action). UNI's CBGI has developed an I4.0 assessment, and are in the process of simplifying use, automating connections to business value and the creation of action plans implementing I4.0 quickly, focused on value. We discuss the tool's current development status at conference time, future streamlining plans (Including online data gathering tools and AI generated plans), and CI efforts for business value alignment. This research is sponsored by the DLA-Troop Support, Philadelphia, PA and the Defense Logistics Agency Information Operations, J68, Research & Development, Ft. Belvoir, VA.

Government Affairs

Room: 201AB – Level 200

Session Chair:

Stephanie Salmon
AFS Washington Office, Washington, D.C.

Panel: Don't Sit on the Sidelines – Be Prepared for New Rules & Regulations in 2024

Stephanie Salmon, AFS VP Government Affairs, Washington, D.C.; Brad Muller, AFS President, Vice President of Marketing, Charlotte Pipe & Foundry Co., Charlotte, NC

Metalcasters and suppliers will encounter a new wave of laws and regulations in 2024. Learn about how AFS is weighing in on key bills and rulemakings, as well as how you can prepare your company and stay ahead of the compliance curve. AFS continues to press for pro-growth measures and halt the regulatory onslaught.

Molding Methods & Materials Division

Room: 202C – Level 200

Session Chair:

Jerry Thiel
University of Northern Iowa, Cedar Falls, IA

Real Time Measurement of Mold and Core Quality in Chemically Bonded Sands *(24-098)*

Nathaniel Bryant, Jerry Thiel, Josh Kowalsky, and Jacob O'Dell, University of Northern Iowa, Waterloo, IA

This study presents a preliminary method to assess and predict the quality of chemically bonded sand molds through the use of embedded sensors. Utilizing miniature hardware, critical variables were measured and used as indicators of curing progression, ultimately predicting the 24-hour transverse strength of phenolic urethane no-bake and furan no-bake sand systems. Employing ANOVA and regression analyses, significant correlations were established between sensor data and strength prediction. This approach, if integrated into production, offers real-time evaluation with the potential to be automated by machine learning. While acknowledging the study's limitations, this research introduces an innovative strategy for optimizing molding outcomes in the foundry industry through wireless, sensor-based monitoring.

Fast Moisture, VOC, and LOI Testing *(24-061)*

Sam Ramrattan, Robert Makin, and Zachary Tay, Western Michigan University, Kalamazoo, MI

This study identifies the use of microwave (MW) and infrared (IR) heating technologies to achieve rapid MC, VOC, and LOI testing in a single unit. A prototype semi-automated tester has been developed using heating technologies capable of completing all three tests in series. The new testing technology allows for a short exposure time to heat a foundry sand sample and provides digital data for the three tests. The actual sample test time is comparable to an automated LOI test and is considerably faster than either the muffle furnace or microwave furnace. The standard of 3-hours for the muffle furnace, or 20 minutes for the microwave furnace is time consuming and requires separate samples for individual tests. This study will confirm there is no significant difference between the AFS Standard MC, VOC, and LOI test and a new semi-automated test.

Schedule is subject to change.

1:30 – 4:45 p.m.

The AFS Institute

Room: 201DE – Level 200

Getting Creative with SPC (Statistical Process Control) *(24-135)*

Ted Schorn, Enkei America Inc., Columbus, IN

If you are using SPC in your facility, you are probably using a standard X-bar and R chart. Did you know that there are at least 30 different types of SPC charts, each with a specific best application in mind? Foundries can especially benefit from attribute control charts as reject rates, defect rates and inspection results require this type of chart to be used. These characteristics are extremely important to foundry quality but are seldom monitored statistically. Learn how to objectively monitor these crucial metrics.

3:15 – 4:45 p.m.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chair:

Travis Bodick
Carley Foundry Inc., Blaine, MN

Development of Improved Repair Welding Alloy and Process for Al-Cu Sand Castings *(24-052)*

David Weiss, Vision Materials, Manitowoc, WI; Gerald Gegel, Material and Process Consultancy, Morton, IL

This project addresses important considerations in the welding of 200 series alloys, specifically castings produced from A206 alloy. This alloy is difficult to weld unless key process parameters are controlled. As the volume of the welded area increases, the difficulty is compounded. We show that control of temperature of the casting during welding is the most important process parameter for low defect welding with acceptable mechanical properties, assuming that basic good welding practices are followed. The weld filler rod is also an important consideration, with the most successful welds produced using 2319 alloy.

Effects of Strontium and Calcium on Cast Al-Si Alloys and Their Relevance to Secondary Aluminum Alloys *(24-048)*

Gabriel Garcia, Nagasivamuni Balasubramani, Michael Moodispaw, and Alan Luo, The Ohio State University, Columbus, OH

Strontium (Sr) and calcium (Ca) have long been known as modifying elements in Al-Si alloys due to their effects on eutectic silicon, causing it to form finer platelets or a coral-like structure that is more beneficial to the ductility of the alloys. These elements have also been shown to modify Fe-intermetallics, suggesting a possible role in secondary aluminum alloys. Despite the microstructural benefits that can result from Sr and Ca additions, they are also surface-active elements that increase the hydrogen absorption of the melt. Calcium in particular is generally viewed as an impurity, as it not only results in more gas porosity, but is a relatively weak silicon modifier. Recent work suggests, however, that both Sr and Ca may play a more significant role in secondary aluminum alloys.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chair:

Travis Bodick
Carley Foundry Inc., Blaine, MN

Understanding the Beneficial Effects of Iron in Cast Aluminum-cerium Eutectic Alloys *(24-094)*

Michael Moodispaw, Alan Luo, and Emre Cinkilic, The Ohio State University, Columbus, OH

Iron (Fe) is typically considered an impurity element in aluminum casting alloys due to the formation of Fe-containing intermetallics which often negatively affect the mechanical performance. Fe is found in bauxite ore used to produce aluminum and accumulation occurs during industrial recycling practices. The recent development of Al-Ce alloys has offered new opportunities for aluminum alloy usage, but the effect of Fe on the alloys is not well documented. The Al-Ce and Al-Ce-Fe systems were investigated to determine the effect of Fe on the Al-Ce binary eutectic alloy. CALPHAD (calculation of phase diagrams) and experimental techniques were used to evaluate the Al-Ce-Fe system. Fe additions to the system were determined to increase the elongation significantly due to suppression of faceted Al11Ce3 binary phase. Microstructure and mechanical property results showed that the Al-Ce-Fe alloy is resistant to intermetallic and grain coarsening with excellent property retention after extended high temperature exposure.

Engineering & Smart Manufacturing Division

Room: 201C – Level 200

Session Chair:

Jim Swanson
General Kinematics, Crystal Lake, IL

Robotic Casting Finishing Cell with Thermal End Effector *(24-115)*

Joshua O'Dell, University of Northern Iowa, Cedar Rapids, IA

Torch cutting is a crucial process in the foundry industry that plays a vital role in shaping and preparing steel castings. The process offers several advantages, such as its versatility in cutting various metal thicknesses, which makes it particularly well-suited for the foundry environment. However, the current method of torch cutting is a dangerous task. Currently, the operator takes an oxyfuel torch, lights it manually and maneuvers the torch by hand. This leaves the operator vulnerable to metal splashing, sparks and managing a flame that can exceed 3000 °C. Safety precautions are of paramount importance due to the heat involved, and proper training and protective gear are necessary to ensure the well-being of workers. The University of Northern Iowa has developed an automated process for torch cutting that can take these workers out of harm's way.

Automated Finishing of Aluminum Castings: Approach for Reducing Programming and Setup Time *(24-121)*

Samuel Manternach, University of Northern Iowa, Waterloo, IA

With increasing challenges in filling positions in finishing rooms, automation has been a tool of many foundries to help fill the gap. Many new and existing robotic tools are already available to perform finishing tasks. However, setting up and programming a new part can be a significant cost and time investment. This can quickly become a serious issue when foundries look to automate the finishing of high mix low volume castings. The University of Northern Iowa Foundry 4.0 Center has undertaken experimentation with non-ferrous castings to demonstrate methods and technology available today that can be used to reduce the setup and programming time needed for a casting. From offline programming, to modular fixturing and force compliant tools, tools and simple strategies exist that can be used to streamline automating a finishing process.

Lost Foam Division

Room: 202DE – Level 200

Session Chair:

Jacob Belke
Mercury Marine, Oshkosh, WI

The Viability of 3D Printed Lost Foam Molds *(24-011)*

Marshall Miller, 3D Systems, Rock Spring, GA; Garrett Iverson, Scenic Industries LLC, Chattanooga, TN

Lost Foam process molding equipment is generally considered expensive with long lead times that can be associated with complexity of the tool designs and high-volume production requiring extensive development. A significant market is available for the Lost Foam process like automatic match plate, high pressure green sand and even highly cored chemical bonded sand processes. Aligned with the Lost Foam Division goals of expanding the marketability and viability of the Lost Foam Process, this paper will demonstrate production of tools for high mix low volume to high volume production level tools using 3D printed polymer and metal tools.

The Viability of Producing ASTM A351 CF8M Stainless Steel in the Lost Foam Process *(24-012)*

Marshall Miller, 3D Systems, Rock Spring, GA

While examples of success producing ASTM A351 CF8M Stainless Steel (0.08% C maximum) have been presented by Mr. Mark DeBruin, the details of the process parameters for being successful are not available to the industry so that producing lost foam stainless steel can be refined and deployed. Some newer Lost Foam sources in Mexico and India have made attempts at producing CF8M grade but were not successful primarily due to carbon pick-up. Defining the base chemistry metal parameters to accommodate carbon pick up, pattern bead type (i.e. STMMA, EPS, PMMA, etc.) and density are not tested and defined including from pattern density levels. Coating types and permeability are also not yet established or molding media parameters although there is some understanding of the process needs. This paper will present the findings of producing stainless steel in production environment Lost Foam and the necessary parameters and materials to do so.

Molding Methods & Materials Division

Room: 202C – Level 200

Session Chair:

Pete Gravunder
Badger Mining Corp., Berlin, WI

Investigation into the Impact of Calibration Methods on the Methylene Blue Clay Test Results *(24-087)*

Liam Miller and Jason St. Onge, American Colloid Co., Hoffman Estates, IL

In the Green Sand molding process, the properties required to make molds to achieve the desired casting quality are heavily influenced by the amount of bentonite clay present in the sand. For this reason, one of the most relied upon quality control tests in the foundry is a measure of the usable bentonite in the sand as measured by the methylene blue clay test. This study investigates multiple calibration approaches used in the methylene blue clay test to convert the raw results obtained in the procedure to a measure of the amount of usable clay in the sand. The study compares the variation from the titration itself compared to results obtained from calibration using several different approaches discussed in previous publications. This study also outlines an approach to estimate the amount of methylene blue dye required for a calibration standard based on the Cation Exchange Capacity (CEC) of the bentonite.

Molding Methods & Materials Division

Room: 202C – Level 200

Session Chair:

Pete Gravunder
Badger Mining Corp., Berlin, WI

Improving Automated Green Sand Control of Water and Bond Addition using Optical Moisture Sensors *(24-044)*

Paul Paulsen, Furness Newburge Inc., Versailles, KY

Optical moisture sensing technology is applied to improve the control of water and bond additions into the muller. The optical moisture sensor measured moisture more accurately than conductivity-based measurements. New control algorithms using optical moisture sensing technology are applied to three different production systems for control of water and/or bond additions. With compactability fixed to a target, the optical moisture measurement correlated to the amount of new bond added to the muller signifying an adjustment in moisture to maintain a water-bond balance. In systems adjusting bond addition based upon control to an available bond target, the replacement of conductivity-based moisture with optical moisture measurement reduced clay and moisture variability. The optical moisture sensor has proved to be a valuable tool in providing better green sand system control and monitoring.

6 – 7 p.m.

Room:
Hilton Milwaukee City Center - Walker Room

Annual Banquet Reception *(Cashless bar)*

Join us for a memorable evening with friends new and old.

7 – 9 p.m.

Room:
Hilton Milwaukee City Center - Crystal Ballroom

Annual Banquet *(Ticket required)*

Join us for business networking and the presentation of the highest AFS honors, the Gold Medals. The cashless bar opens at 6 p.m. The awards presentation and banquet start at 7 p.m. The President's After-Party starts at 9 p.m. *Recommended dress is business formal. Ticketed Event – $135*

9 – 10 p.m.

Room:
Hilton Milwaukee City Center - Crystal Ballroom

President's After-Party *(Cashless bar)*

Network with your industry peers at this fun capstone to the evening.

Schedule is subject to change.

Wednesday, April 24, 2024

7 – 8 a.m.

Room: 103CD – Level 100

Author Chair Breakfast

This breakfast is for AFS speakers, session chairs, students and staff to meet and coordinate details for the day's educational sessions.

7 a.m. – 5 p.m.

Foyer – Level 200

Registration Open

7:30 – 9 a.m.

Room: 102ABCDE – Level 100

Women in Metalcasting Breakfast

This event is open to members of Women in Metalcasting. It includes a continental breakfast, networking, and the presentation of the 2024 Women in Metalcasting Award for Excellence. For more information or to RSVP for this event, contact WIM liaison Katie Matticks at kmatticks@afsinc.org.

Sponsored by:

7: 30 – 10:30 a.m.

Foyer – Level 200

Coffee Station by Registration and AFS Technical and Management Sessions

Coffee sponsored by:

Albarrie

SILVER NEEDLE INC

7: 30 a.m. – 5 p.m.

Atrium – Level 200

AFS Store Open

8 – 9 a.m.

Additive Manufacturing Division

Room: 202DE – Level 200

Session Chair:

Kelley Kerns
HA-International, LLC, Westmont, IL

3D Sand Printing 101 *(24-132)*

Dave Rittmeyer, Matthews Additive Technologies, Pittsburgh, PA

Applying 3D sand printing in your facility will be more successful the better you understand it and how it can be applied. We will review how it works and how to handle printed sand. We will also review some of the different binder options that are on the market.

Advanced AM 3D Printed Sand Mold Technologies to Support Casting Supply *(24-117)*

Greg Colvin, Honeywell Aerospace, Phoenix, AZ

U.S. casting supply has limited responsiveness for many high-integrity hardware especially for sporadic low-quantity demand military applications. AM provides an opportunity to augment the casting supply chain by filling gaps in supplier readiness. This presentation will discuss new advanced AM technologies that can be leveraged by the casting supply chain to improve their responsiveness to new casting orders. Technologies discussed will include improvements to 3D-printed-sand mold production methods. These will include improving sand mold surface roughness, reducing outgassing from 3D printed sand mold during casting and methods to reduce dimensional variation between repetitive mold builds. AM technologies available to build rapid tooling including machining fixtures and inspection tooling will. Advanced AM high-strength metallic and polymeric systems will be presented that can be leveraged for tooling and other applications.

Schedule is subject to change.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chairs:

Hideki Gebken
Standard Manufacturers Services Ltd., Winnipeg, Canada

Dan Hoefert
Eck Industries, Inc., Manitowoc, WI

Effect of Mg Content on the Shear Strength of Al-Si-Mg and Al-Si-Cu Alloys at Elevated Temperatures *(24-013)*

Jacob Belke, Mercury Marine, Oshkosh, WI; Paul Sanders, Michigan Technological University, Houghton, MI

Die soldering in the permanent mold casting process is observed to be aluminum bonded to the die surface and has historically been associated with Al-Fe intermetallics forming between the molten aluminum alloy and the die steel during the casting process. Researchers on the topic have recently been given a new thermomechanical model that rebuts the deep-rooted thermodynamics and kinetics-based theoretical understanding of soldering. This new model accounts for the strength of the aluminum alloy, specifically the shear strength, as a function of temperature. This work fills in the knowledge gap of die cast aluminum shear strength at elevated temperatures observed at the time of part ejection. To further test the model, varying amounts of magnesium was added to A356, A362, and A380 to increase the alloy shear strength. Data from the experiment shows the shear strength increased as with increasing amounts of magnesium even at higher temperatures.

Impact of Columnar Grains on Fatigue Performance of Aluminum Castings *(24-109)*

Robert Mackay, Glenn Byczynski, and Anthony Lombardi, Nemak US/CAN Business Unit, Windsor, ON

Laboratory life-to-failure methods, used to estimate aluminum casting fatigue durability, are critical for establishing intended lifespan service conditions. The Over-Stress Probe (OSP) method, which is widely used in academia and industry, has benefits and drawbacks in adequately providing a lifespan estimation. Normally, when an OSP protocol is followed, not all fatigue test samples are examined with fractography. Only a fatigue performance value is cited with any failures driving addition fatigue sample testing which contributes to delays and cost overruns for casting launch programs. Instead, the authors have utilized a more complete fractographic examination to help process developers understand the role of the casting parameters on fatigue performance. The authors have taken this approach with this manuscript on an OSP test regime which includes a total of 66 fatigue samples, all with fractographic observations of the flaw characterization and size that nucleated the fatigue fracture.

Melting Methods & Materials Division

Room: 201C – Level 200

Session Chair:

Jeremy Mowry
American Cast Iron Pipe Company, Birmingham, AL

Installation of a Systems Spray-Cooled™ EAF Roof, Experiences, and the Reasons for Installation *(24-010)*

Louis Valentas, SYSTEMS Spray-Cooled, Cranberry Township, PA

In 2008, a leading steel foundry in OH, successfully installed and commissioned a new spray-cooled roof to replace its existing refractory brick roof. The conversion from refractory to spray-cooling was done to reduce the refractory and maintenance costs associated with a brick roof, and to increase the availability and safety of their 20-ton EAF. This paper will describe the project as well as 16 years of experience with the operation and maintenance of the spray-cooled roof.

Designing the Least Expensive Charge Mix using Data Analytics and Optimization for Grey Cast Iron (Grade FG 220) *(24-065)*

Deepak Chowdhary and Nilanjan Banerjee, MPM Infosoft Pvt. Ltd., Chennai, India

In this paper a data analytics driven decision making strategy has been reported for controlling and reducing the defects related to the prepared sand properties that are used in the sand-casting foundries. Three important sand-related defects, namely blow hole, sand inclusion, and erosion scab, have been analyzed for this purpose, and their root cause analysis has been performed utilizing historical data from the foundry spanning one year. Both qualitative and quantitative viewpoints have been presented in terms of change in prepared sand properties with respect to the change in the amount of defects reported across the period of analysis. The results are further investigated by considering the quantity of additives added to the prepared sand used in foundries. The analysis suggested that the reduction in defects is strongly associated with the prepared sand properties and the amount of additives used during the period of analysis.

Metalcasting Research

Room: 201AB – Level 200

Session Chair:

Andy Bain
Ford Meter Box Co. Inc., Carmel, IN

Alternative Eutectic Systems for High Conductivity Applications *(24-029)*

Diran Apelian, Carl Soderhjelm, Benjamin MacDonald, and Kentaro Lunn, Advanced Casting Research Center, Irvine, CA; Yanis Cantaloube, Polytech Montpellier, France

Enhancing thermal conductivity in aluminum alloys can drive superior performance and efficiency across diverse engineering applications, including EV powertrain components. While high pressure die casting (HPDC) relies on the predominant Al-Si system alloys such as 356, these alloys exhibit suboptimal thermal conductivity in their as-cast state. Although conductivity can be improved through costly heat treatments, limitations within the Al-Si alloy system persist. Alternative eutectic systems offer the potential in surpassing both mechanical and conductivity properties of the Al-Si system. However, there is a lack of studies evaluating the intricate interplay between the microstructural parameters and conductivity properties within these novel alternative eutectic systems. Therefore, this study bridges this gap by investigating hypoeutectic alloy compositions designed through ICME principles to elucidate the relationship between the eutectic phase structures and overarching conductivity performance. This research contributes to advancing the understanding of alloy design principles for alternative eutectic systems.

Steel Division

Room: 202C – Level 200

Session Chair:

Robert Tuttle
Western Michigan University, Kalamazoo, MI

Failure Analysis of Large Alloy Steel and White Iron Castings *(24-023)*

Daniel DeMiglio and Robert Schrock, ME Global, Minneapolis, MN

White iron and alloy steel mill liner castings as large as 5 tons are typically used in semi-autogenous grinding mills, Autogenous grinding mills, and ball mills to process mineral ores after primary/secondary crushing. A failure is defined as the inability of a manufactured part or an assembly to perform its intended function for any reason during its service life. Case histories will be presented on AG and SAG mill feed end / discharge end head liners, shell liners, and discharge grates that either fractured prematurely or did not perform as designed in service. Failure Analysis is the collection and analyzing of data from all relevant sources and locations to determine the cause of failure and make recommendations to avoid future failures. Details related to the process of metallurgical failure analysis will be discussed along with lessons learned to identify possible ways to avoid future failures.

Segregation of Cast Medium Mn Steels *(24-116)*

Robert Tuttle and Mujeeb Shaik, Western Michigan University, Kalamazoo, MI

Quenching and partitioning steels have attained a significant amount of research in the past five years. These steels represent a new alloying and heat treatment strategy. These alloys have the potential to provide new market opportunities for steel castings. Many researchers include a homogenization step in the heat treatment to reduce the effect of segregation. However, little data has been presented in the open literature showing such segregation. The work in this paper examines macro and micro segregation in a Y-block casting. Spectrometry of the casting and SEM/EDS analysis were conducted to characterize the amount of segregation and determine the need for a homogenizing heat treatment. Little segregation was found which indicates a homogenizing step is unnecessary in the size range of Y-block used.

8 – 10:15 a.m.

The AFS Institute

Room: 201DE – Level 200

Intro to Supervisor Development: An Overview (Part 1) *(24-136)*

Jim White, Consultant, Green Valley, AZ

The Institute's newest 2-day course will be presented in an overview. Designed to assist new supervisors acquire the knowledge and skills required to be an effective leader. The course covers a wide range of topics including team leadership, communication, employment issues, and building on your success as a leader. It is especially designed to help those in the metalcasting industry (union and non-union) who are supervising hourly, or salaried workers. Introduction to Supervisor Development is beneficial to those who have been recently promoted from hourly or salaried ranks who have little previous experience in supervision and for supervisors that have not had any formal training.

9 a.m. – 6 p.m.

Hall AB – Level 300

Exhibits Open

9 – 9:30 a.m.

Room: Casting Source Theater in the AFS Hub

AFS Newcomer Welcome

Ben Yates, American Foundry Society, Schaumburg, IL

Are you new to the American Foundry Society? Attend the AFS Newcomer Welcome session to learn about all the areas of AFS that you can participate in, enhancing your peer network, industry expertise, and your organization's long-term success.

9:15 – 10:15 a.m.

Additive Manufacturing Division

Room: 202DE – Level 200

Session Chair:

Brandon Lamoncha
Humtown Products, Columbiana, OH

Additive Manufacturing Influence and Benefits on Marine Castings *(24-151)*

Clayton Rasmussen, Mercury Marine, Fond du Lac, WI

Additive manufacturing (AM) has opened countless opportunities for the advancement of the casting industry. Mercury Marine is pushing the boundaries of traditional manufacturing of casting tooling and creation of prototypes through significant investment in applications of AM. Mercury Marine creates castings using a variety of methods including High Pressure Die Cast, Lost Foam, Gravity Pour, and Investment, each with specific benefits enabled by AM. Engineers can exercise their in-house additive capabilities and outside partnerships to increase their influence on casting quality, schedule attainment, and maintenance mitigation. Powder Bed, Wire Arc, Sand, and FDM will be showcased to exemplify AMs disruption of the casting environment, and its benefits to the entire casting industry.

3D Sand Printing Adoption in A Production Environment *(24-152)*

Kyle Peterson, Grede Iron Mountain, Kingsford, MI

Grede Foundry will share some of their experiences in evaluating, both technically and from business ROI perspective, 3D sand printing technology in their production foundry over the past 8 years. Since then, Grede has expanded with additional sand printers and have integrated for the applications in automotive, high-volume, high-performance iron casting production.

Schedule is subject to change.

Copper Division

Room: 202C – Level 200

Session Chair:

Jacob Johnson
Foseco, Brook Park, OH

Molten Metal Processing of Copper Casting Alloys for Improved Mechanical Properties *(24-169)*

Carl Soderhjelm and Diran Apelian, ACRC, University of California, Irvine, CA; Timothy Strelitz and Peter Sinsheimer, California Metal-X, Los Angeles, CA

The quality of the molten metal is crucial for high integrity and quality castings. In steelmaking the treatment of the molten steel through vacuum degassing methods has yielded significant improvements in the resultant product's properties. In aluminum, the processing of the molten metal to reduce hydrogen levels via degassing as well as inclusion removal via filters has enabled the industry to produce high integrity components. In both ferrous and nonferrous metals, molten metal processing has shown to be impactful in the resultant cast products. In this presentation, the focus is on molten metal processing of copper alloys. Specifically, the results show improvements in UTS and elongation values in alloys such as C87850 and C96400, as well as in other copper-based alloys. The work will be presented, reviewed, and discussed.

Environmental, Health & Safety Division

Room: 202AB – Level 200

Session Chair:

Craig Schmeisser
Mad River Strategies LLC, New Bremen, OH

Panel: EHS Hot Topics *(24-165)*

Jeet Radia, McWane, Inc., Birmingham, AL; Bryant Esch, Waupaca Foundry Inc., Waupaca, WI; Brent Charlton, Metal Technologies Corporate Center, Auburn, IN

- **Air Quality**
  Jeet Radia, McWane, Inc., Birmingham, AL
- **Water, Waste & Byproducts Management**
  Bryant Esch, Waupaca Foundry Inc., Waupaca, WI
- **Safety & Health**
  Brent Charlton, Metal Technologies Corporate Center, Auburn, IN

Environmental, Health & Safety Committees overview.

Engineering & Smart Manufacturing Division

Room: 201C – Level 200

Session Chair:

Zach Meadows
Electric & Controls System Inc., Birmingham, AL

AFS Industry 4.0 Survey *(24-007)*

Andrea McDermott, A.Y. McDonald Mfg. Co., Dubuque, IA

Exploration of today's technologies defined by Industry 4.0 led to the AFS Industry 4.0 Committee conducting a comprehensive survey among AFS members employed in foundries, inquiring about the current state of Industry 4.0 practices in October 2022. The analysis of the survey responses provides groundbreaking insights and guidance for AFS and the foundry industry, highlighting the significance of Industry 4.0 in improving processes and maintaining competitiveness. These findings offer a unique understanding of I4.0 adoption and its impact on the foundry and casting industry, setting a benchmark for future advancements.

Events | Technical Track | Management Track | AFS Institute | Casting Designers & Buyers

Women in Metalcasting

Room: 201AB – Level 200

Session Chair:

Maddie Wilson-Smith
Pittsburgh Foundry & Machine, Pittsburgh, PA

Panel: Balancing Act – Navigating Work & Life *(24-149)*

Jason Gutierrez, Soundcast, South Gate, CA; Michael Looby, Inductotherm Corp., Rancocas, NJ; Wil Tinker, Tinker Omega, Springfield, OH; Michelle Ring, Ductile Iron Society, Carmel, IN

Work-life balance is a universal concern that transcends gender boundaries, and its exploration can yield valuable insights for individuals and organizations alike. This panel presentation, titled "Balancing Act: Navigating Work and Life," brings together a diverse group of accomplished professionals to share their personal experiences, challenges, and strategies in achieving work-life balance. The panelists will delve into the multifaceted nature of work-life balance, offering a nuanced understanding of its definition and significance. Through candid storytelling, the speakers will share personal anecdotes that shed light on the unique aspects of their individual journeys.

Sponsored by:

9:30 – 10:15 a.m.

Casting Designers & Buyers

Casting Source Theater in the AFS Hub Hall AB – Level 300

Session Chair:

Ben Yates
American Foundry Society, Schaumburg, IL

Data-Driven Design Properties for Cast Carbon Steels *(24-020)*

Raymond Monroe, SFSA, Crystal Lake, IL; Jianyu Liang, Worcester Polytechnic Institute, Worcester, MD

Steel Founders' Society of America (SFSA) has collected the ordinary testing results for commercial carbon steel heats from a variety of producers, in order to develop an extensive data set of properties. This data set has been analyzed and is compared to steel mill properties, specifications, and allowable design values, which are embedded in American Institute of Steel Construction- Specification for Structural Steel Buildings (AISC-ASD), and the ASME Boiler and Pressure Vessel Code (ASME BPVC). This analysis demonstrates the capability of carbon steel castings to provide safe and reliable service that is compatible with steel mill products in fabrications or other structures. Statistically supported values for tensile properties for steel castings are reported and compared with other steel products.

Schedule is subject to change.

10:30 – 11:30 a.m.

Hoyt Memorial Lecture

Ballroom AB – Level 100

Embracing Adversity – Mining the Riches from Life's Challenges *(24-124)*

Mike Lenahan, Badger Mining Corp., Berlin, WI

Life is unpredictable and often presents significant challenges and hardships. These challenges and hardships do not determine our ultimate destination, but rather give us an opportunity to grow and find new meaning. Adversity often allows us to expand our vision, renew and restore our appreciation, and develop new skill sets to thrive.

Mike Lenahan is Executive Vice President - Industrial Sales at Badger Mining Corporation. A graduate of Bowling Green State and Notre Dame, Lenahan started his career at Sand Products of Cleveland in 1987. He has since become an expert on foundry sands and foundry recycling, having authored multiple papers on both topics. Lenahan is a Past President of AFS. He has been an active member of several AFS chapters and is a past chair of the EHS Division and Government Affairs Division. Lenahan also has served on the board of the Ohio Cast Metals Association and as secretary-treasurer of the Foundry Association of Michigan.

11:30 a.m. – 1:30 p.m.

Capital Grille

Past Presidents' Luncheon

The annual gathering for all past AFS Presidents. *Must be a previous AFS President to attend.*

11:45 a.m. – 12:45 p.m.

Casting Source Theater in the AFS Hub Hall AB – Level 300

IJMC-FEF Student Technical Research Contest

Andy Bain, Ford Meter Box Co. Inc., Wabash, IN – Chair of Research Board; Adam Kopper, Brunswick Corp., Fond du Lac, WI – Chair of Technical Council; Thomas Prucha, Metalmorphosis, LLC, Rochester Hills, MI – Technical Editor of the International Journal of Metalcasting

The IJMC/FEF Student Research Competition empowers top undergraduate college students to showcase their metalcasting research projects at Metalcasting Congress. Winners earn scholarships and are published in the International Journal of Metalcasting. All submissions are judged by a leading panel comprised of the AFS Research Board and officers of the AFS Technical Council. Up to $4,000 in total scholarships will be awarded.

1 – 1:45 p.m.

Casting Designers & Buyers

Casting Source Theater in the AFS Hub Hall AB – Level 300

Session Chair:

Ben Yates
American Foundry Society, Schaumburg, IL

Surface Finish *(24-040)*

Mark White, Impro Industries, Palm City, CA

Surface finish requirements are usually implied in discussions and referenced as an RMS or Ra value. Little discussion occurs about the functional reason for the finish unless it is an airflow requirement in a turbine engine casting. This paper is offered to the AFS Metal Casting Congress-2024 as a service to both sides of this topic- casting purchaser and casting manufacturer. The paper discusses surface technology, surface finish attainment, and surface finish inspection with an added section about problems in additive manufacturing relative to surface roughness and inspection. The author's hope in offering this work at Metalcasting Congress 2024 is that the audience gains valuable information to go on and successfully handle this topic in their own companies where the situation is turned from "production stopping" to smooth production.

1:30 – 3 p.m.

Environmental, Health & Safety Division

Room: 202AB – Level 200

Session Chair:

Craig Schmeisser
Mad River Strategies LLC, New Bremen, OH

"Operational Learning"– Lessons from Practical Application *(24-167)*

Brent Charlton, Metal Technologies Corporate Center, Auburn, IN; Mickey Hannum, McWane Inc., Birmingham, AL

- A review of Human and Organizational Performance Principles
- What does "accountability" really mean? Hint: It's not disciplinary action!
- Context as a factor in incident learning – does discipline solve the problem?
- It's not just about safety and it's not just about hourly employees. We all create context for others.

Panel: Metalcasters' Journey with DOE's Better Plants and Better Climate Programs *(24-166)*

Kalie Miera, DOE, Oak Ridge National Laboratory, TN; Rollis Reisner, McWane Inc., Birmingham, AL: Bryant Esch, Waupaca Foundry Inc., Waupaca, WI; Dan Plant, Metal Technologies Inc., Better Climate Program, Auburn, IN

- Industry and DOE partner to reduce energy intensity by 25% over 10-year period.
- Industry partners receive DOE technical assistance, tools, resources, and national recognition.
- Introduction to the new DOE Energy Intensive Industries pilot program.
- Panel: real foundry perspective on the benefits of partnering with DOE.

Marketing Division & Talent Development Division

Room: 202DE – Level 200

Session Chair:

Tim Williams
Vice President of Sales, Batesville Products Inc., Lawrenceburg, IN

Panel: Fostering a Collaborative Ecosystem for Aligning Marketing and HR Strategies for Economic Success

Tim Williams, Batesville Products Inc., Lawrenceburg, IN; Dana Cooper, Cooper Hayes LLC, Stevensville, MI; Amanda Groves, Lodge Mfg. Co., South Pittsburg, TN; Towanda Long, APR, Charlotte Pipe & Foundry Co., Charlotte, NC; Michelle Szymik, Wisconsin Aluminum Foundry, Manitowoc, WI

Moderator:

Tim Williams
Vice President of Sales, Batesville Products Inc., Lawrenceburg, IN

Panelists:

Dana Cooper
CEO/President, Cooper Hayes LLC, Stevensville, MI

Amanda Groves
Vice President of People & Culture, Lodge Mfg. Co., South Pittsburg, TN

Towanda Long, APR
Director of Marketing, Charlotte Pipe & Foundry Co., Charlotte, NC

Michelle Szymik
Vice President-Human Resources, Wisconsin Aluminum Foundry, Manitowoc, WI

This session will delve into new strategies and tried-and-true best practices that demonstrate how fostering collaboration between marketing and HR departments can enhance talent acquisition, employer branding, and overall business growth for metalcasters and industry suppliers. Bring your questions for this interactive panel!

Schedule is subject to change.

Melting Methods & Materials Division

Room: 201C – Level 200

Session Chair:

Michael Becker
Allied Mineral Products Inc., Elkhart Lake, WI

Panel: Coreless Induction Furnace *(24-160)*

Mark Kohler, Ajax Tocco Magnethermic Corp., North Canton, OH; Dave Lazor, Ajax Tocco Magnethermic Corp., Warren, OH; Patrick O'Connor, Inductotherm Corp., Toms River, NJ

This panel will cover the basics of coreless induction furnaces and their subsystems with special attention given to ground detection systems. Operationally, this panel will also address the effects of bridging and superheating of a coreless induction furnace.

- **Bridging and Superheating of Coreless Induction Furnaces (24-160a)**
  Mark Kohler, Ajax Tocco Magnethermic Corp., North Canton, OH
- **Ground Detection Systems in Coreless Induction Furnaces (24-160b)**
  Dave Lazor, Ajax Tocco Magnethermic Corp., Warren, OH
- **Coreless Induction Furnace 101 (24-160c)**
  Patrick O'Connor, Inductotherm Corp., Toms River, NJ

1:30 – 4:45 p.m.

The AFS Institute

Room: 201DE – Level 200

Intro to Supervisor Development: An Overview (Part 2) *(24-137)*

Jim White, Consultant, Green Valley, AZ

The Institute's newest 2-day course will be presented in an overview. Designed to assist new supervisors acquire the knowledge and skills required to be an effective leader. The course covers a wide range of topics including team leadership, communication, employment issues, and building on your success as a leader. It is especially designed to help those in the metalcasting industry (union and non-union) who are supervising hourly, or salaried workers. Introduction to Supervisor Development is beneficial to those who have been recently promoted from hourly or salaried ranks who have little previous experience in supervision and for supervisors that have not had any formal training.

2 – 2:45 p.m.

Casting Designers & Buyers

Casting Source Theater in the AFS Hub Hall AB – Level 300

Session Chair:

Ben Yates
American Foundry Society, Schaumburg, IL

Update on AFS Project for Digitizing Various Knowledge Platforms *(24-106)*

Brian Began, American Foundry Society, Inc., Schaumburg, IL

This presentation will focus on AFS's efforts to improve digital accessibility and operability of its various knowledge platforms. This digitization entails improving navigation and functionality/searchability between various platforms including the digital library, AFS OnLive webinars, a new, yet-to-be-developed digital publication platform, CADS (Casting Alloy Database Search), and others. These efforts will also make AFS platforms more mobile-friendly and include creating new reference instructional/educational videos. Ultimately, it will highlight the various exciting ambitions with projected timelines and the status of the ongoing AMC Emergent Metal Casting Solutions (EMCS) project, funded by the Defense Logistics Agency (DLA) and AFS under the project title "Virtual Knowledge Transfer Platforms for Improved Access to Metalcasting Best Practices".

3 – 3:30 p.m.

Ballroom AB – Level 100

SFSA's Casting Dreams

Casting Dreams is a chance for young people to discover the fun and creativity in making a casting. Pre-college age participants are able to cast anything they can dream of making. The entries will be on display and the awards for castings contributed will be on display at Metalcasting Congress. Come by and see the efforts of the next generation of casting makers.

3 – 3:30 p.m.

Casting Designers & Buyers

Casting Source Theater in the AFS Hub Hall AB – Level 300

Session Chair:

Ben Yates
American Foundry Society, Schaumburg, IL

2023 Casting of the Year: Tooling & Equipment International *(24-174)*

Oliver Johnson, Tooling & Equipment International, Livonia, Michigan, USA

There's a lot riding on the 2023 Casting of the Year — literally. Join us as we showcase the Cadillac Celestiq's rear rail underbody, a remarkable casting created by Tooling & Equipment International (Livonia, MI). Two rear rails are among a total of six giant castings, which, when connected, make up the car's entire underbody. A completely clean-sheet design with no predecessor, the 59.5-lb. casting measures in at 58.5 x 22.5 x. 33.3 inches. It was made with TEI's own proprietary sand cast alloy developed for high ductility (bendability), an essential property for the automotive industry. Be inspired by the possibilities and advancements in the field of metalcasting as we celebrate this outstanding achievement and worthy winner of last year's Casting of the Year competition.

3:15 – 4:45 p.m.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chairs:

David Weiss
Vision Materials, Manitowoc, WI

Carl Soderhjelm
ACRC, Irvine, CA

Casting of Graphene (GNPs) Reinforced Aluminum Alloys Composites *(24-077)*

Omid Ghaderi, Mehran Zare, Chanyeop Park. and Pradeep Rohatgi, University of Wisconsin-Milwaukee, Milwaukee, WI; Behzad Niroumand, Isfahan University of Technology, Isfahan; Roger Scherer, Plastics Engineering Technology, Wisconsin Rapids, WI

This paper presents/reviews recent research on the development of high-performance aluminum matrix composites (MMCs) incorporating Graphene NanoPlatelets (GNPs) into cast aluminum alloys. This paper discusses using including stir casting, squeeze casting, pressure infiltration, and Covetics processing. The effects of Graphene on the mechanical behavior and microstructural evolutions of Graphene reinforced aluminum alloy matrix composites (GMMCs) during solidification are discussed. The challenges of formation of agglomerates of graphene, porosity, aluminum carbide and segregation of graphene during solidification, and possible strategies of overcoming these issues are discussed. The potential of Covetic Processing (where electrical fields are applied to the melts) to form aluminum–carbon-graphene alloys with ultra-high mechanical and physical properties are presented.

Schedule is subject to change.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chairs:

David Weiss
Vision Materials, Manitowoc, WI

Carl Soderhjelm
ACRC, Irvine, CA

Solidification Processing of Reduced Graphene Oxide Dispersed Aluminum Nanocomposites by Squeeze Casting Techniques *(24-080)*

Arsha AG, M.E. and Rajan TPD, Ph. D, CSIR National Institute for Interdisciplinary Science and Technology, Trivandrum, India, Trivandrum; Omid Ghaderi and Pradeep Rohatgi, University of Wisconsin-Milwaukee, Milwaukee, WI

This paper is on synthesis and processing of Al- reduced Graphene Oxide (rGO) composites utilizing the squeeze casting technique. The conversion of graphite to rGO through Hummers method and different weight percentage of rGO were incorporated into Al356 alloy matrix to optimize properties and processability. Combined compocasting and squeeze casting, a hybrid method was employed to disperse reduced Graphene oxide uniformly within alloy matrix by applying both mechanical stirring for dispersion and squeeze pressure for more rapid and pore free solidification. This technique resulted in a homogenous distribution of rGO with good interface with the matrix. The squeeze cast Al 356-0.3%rGO composites exhibited tensile strength of 340 MPa, hardness was 130 BHN, coupled with a low coefficient of thermal expansion (CTE) of 10.83 × 10-6 /°C@RT-50°C, and it also significantly enhanced tribological performance. These results suggest potential applications of these composites in high performance industrial, automotive, and aerospace sectors.

Gravity and Semisolid Casting of Self-Healing Aluminum Matrix Composites *(24-055)*

Sumit Sharma, Amity University, Noida; Masum Bellah, Vaibhav Srivastava, and Pradeep Rohatgi, University of Wisconsin-Milwaukee, Milwaukee, WI

The current research focuses on casting self-healing metal matrix composites with aluminum alloy as a matrix, and Nitinol fiber as reinforcement. The shape memory effect of Nitinol fibers can cause them to shrink and narrow the crack in cast matrix material. Self-healing metal matrix composite samples were cast using gravity die casting, and semi solid casting after rapid slurry formation (RSF). Casting procedures, microstructures, and mechanical properties are reported. The cast aluminium-Nitinol fiber composite samples prepared by both techniques were cracked under load; both types of samples exhibit a reduction in the width of the crack in the samples upon heating the sample above the transformation temperature of Nitinol. Under certain conditions, the cracks in cast alloys reinforced with Nitinol have been completely sealed leading to self-healing.

Cast Iron Division

Room: 202DE – Level 200

Session Chairs:

Ashley Marks
John Deere Foundry Waterloo, Waterloo, IA

Brandon Reneau
Caterpillar Inc., Mapleton, IL

Observational Study for Developing a Predictive Regression Model for Ultimate Tensile Strength of Gray Iron Class 25A *(24-034)*

Carlos Crespo, C6σBB, ASQ CMQ/OE, Granger, IN

The ASME Boiler Pressure Vessel Code Section IV, Article 2, requires that each individual tensile strength test of a cast test bar be equal or above 25,000 psi (ASTM A48/A48M-03, class 25A) in order to approve the castings lot. The results of the analyses of this observational study led to the conclusion that it's possible to predict, with a high confidence level (≥ 99.0%), the ultimate tensile strength of a new individual observation. The observational study consists of an exploratory data analysis of one-year (2011) mechanical and chemical tests taken during production of heat-exchanger castings. A more adequate regression model is selected from several iterations. The implementation and validation of the model led to establish an effective process control of Carbon Equivalent, which made possible to achieve 100% tensile strength compliance of individual tests in 2012 and more than 99.75% in the following years.

Section Sensitivity of Mechanical Properties in Pearlitic Spheroidal Graphite Iron Castings with Heavy Section *(24-041)*

Haruki Itofuji, Adstefan Casting Solution Center, Japan; Satoshi Yamamoto, Daiwa Heavy Industry Co. Ltd.,Hiroshima

The causes of section sensitivity on tensile and impact properties in pearlitic spheroidal graphite iron castings were investigated using sand-molded samples with modulus (M) from 1.25 to 5 cm. It was found that the most influential factor on the section sensitivity of tensile properties was the microstructure of reticulated ferrite precipitated along the prior austenite grain boundaries. This reticulated ferrite precipitated at M over 3 cm. For impact properties, the precipitation of the reticulated ferrite and the increase in the spacing of the pearlite layers tended to decrease the absorbed energy in the transition region. These section sensitivity on tensile and impact properties were improved by normalizing.

Effect of Casting Method and Surface on Ductile Iron Machinability *(24-102)*

Jared Teague, University of Tennessee Martin, Martin, TN; Simon Lekakh, Missouri University Science and Technology, Rolla, MO

Machinability measurements were conducted during face cutting of ferritic/pearlitic ductile irons, produced by the continuous casting process (8" diameter cylindrical bars), and by sand mold castings (10" diameter, 5J-AFS discs). These two processes provided significantly different cast surface topology, near-surface microstructure (so-called "casting skin") and graphite nodule count in the casting body. Cutting forces and tool wear were measured for different machining parameters. The continuous cast ductile iron provided better surface machinability because, in this case, the casting skin had less adverse effect on tool wear and cutting energy than in the case of the sand castings. However, sand castings showed better machinability of the casting body because they had a finer graphite structure. Quantitative microstructure analysis was used to correlate graphite structure in ductile iron to chip formation. These tests provide data that can be used for machining process planning.

Molding Methods & Materials Division

Room: 202C – Level 200

Session Chair:

Michelle Ring
Ductile Iron Society, Carmel, IN

Iron & Steel Castings and Core Production Results from Finer Grades of Chromite Sand in Shell Applications *(24-033)*

Robert Steele, FACT, PonteVedra Beach, FL; Kelley Kerns, HA-International, LLC, Westmont, IL; Patricia LaFay and Victor LaFay, Common Sense Applications, Cincinnati, OH

Chromite Sands have been utilized to produce cores in foundries for many years. This investigation focuses on finer grades of chromite sand for core produced with shell technology. The specific shell cores produced result from the unique thermal characteristics of finer grades of chromite sand. The resulting castings demonstrate a high level of casting integrity.

Judging the Effect of Penetration and Mil Thickness on Core Wash Performance in PUNB Steel Applications *(24-045)*

Nick Knotts, The Lawton Standard Co., Novi, MI

This study investigated the relationship between mil thickness, penetration, and core wash performance in a high temperature, no-bake molding application with steel. It was found that the depth of wash penetration strongly correlates to the performance of the core wash. With a single coat of wash, mil thickness was proved to be inversely proportional to penetration and was found to correlate negatively to wash performance. A statistical discovery was made that wash penetration is a significant driving factor of wash performance when a single coat is applied. This research statistically defines how penetration and mil thickness are related to each other and how they affect wash performance. Findings made in this study may be utilized to eliminate the need for multiple coats of wash and to better determine the ideal wash baumé or specific weight for different wash compositions.

Copper Alloys Division

Room: 201C – Level 200

Session Chairs:

Buddy Barnhill
Lee Brass Co., Anniston, AL

Jacob Johnson
Foseco, Brook Park, OH

The Goal of Safety Programs *(24-140)*

Ted Schorn, Enkei America Inc., Columbus, IN

Safety is a bit like love! Everyone is in favor of it but few can define it – and those that do often disagree with each other! All of us need a clear understanding of the word safety and how that definition applies to our facilities. This presentation will review several common definitions of safety and propose a more useful and conceptual definition that all sides can rally around.

Perspectives on the Autonomous Inspection of Castings *(24-139)*

Ted Schorn, Enkei America Inc., Columbus, IN

When should metal casters invest in autonomous inspection of castings? Given the cost of such systems, when might they have a decent return relative to human inspection options? Just what is involved in making use of these technologies? This presentation will provide an introduction to these systems and describe when they work well and when they do not.

3:35 – 4:45 p.m.

Young Professionals

Room: 201AB – Level 200

Session Chair:

Jordan Brown
BCI Solutions Inc., Bremen, IN

Panel: Networking 101 – Building & Maintaining *(24-142)*

Earl Miller, Hiler Industries, LaPorte, IN; Brad Muller, Charlotte Pipe & Foundry Co., Charlotte, NC; Stephanie Salmon, AFS Washington Office, Washington DC; Michael Halsband, Sinto America, Grand Ledge, MI

Are you making good networking connections in the industry? How are you networking with different personalities? How do you overcome that sometimes "uncomfortable" feeling when needing to network? What are some motivations for networking? Come join some of the best networking people in the metalcasting industry to learn how they make it all happen! Learn some tips and tricks you can utilize to network, grow your network and keep it going.

How to Network:

- Elevator Pitches
- What is your motivation to network?
- How do you maintain networking connections for the long-term?
- How do you network with different personalities?
- How has networking improved your role in the industry?
- What are your tips and tricks that you utilize to network that are easy?

Sponsored by:

Schedule is subject to change.

3:45 – 4:10 p.m.

Sponsored Presentation

Casting Source Theater in the AFS Hub
Hall AB – Level 300

Workforce Development in Metalworking and Defense Manufacturing

Matthew C. Draper, Ph.D., Technical Director – Metallurgy and Manufacturing for the Office of the Under Secretary of Defense for Acquisition & Sustainment

Matt Draper will be discussing the METAL program, a national workforce initiative funded by the DoD's IBAS Program and in partnership with IACMI. This initiative, dedicated to the casting, forging, and plate rolling industries, aims to create a training network to meet workforce needs through 2050. Draper will highlight METAL's mission to empower the next generation of innovators and builders in these sectors. He'll also address the critical need to respond to the shrinking supply chain for defense materials by rebuilding

4:30 p.m.

Hall AB – Level 300

Exhibit Floor Reception

Attendees are encouraged to mingle on the exhibit floor with exhibitors. Enjoy appetizers and refreshments.

5 – 6 p.m.

Room: 103CD – Level 100

Young Professionals Reception

Join members of the AFS Young Professionals and other industry professionals for a fun networking event for rising leaders. No prior registration necessary. All attendees are welcome. For more information, contact AFS Young Professionals liaison Cathy Potts at cpotts@afsinc.org.

Sponsored by:

6 – 9 p.m.

Harley-Davidson Museum

AFS Alumni Dinner

Alumni will experience the Harley-Davidson Museum, touring the vast collection of Harley-Davidson motorcycles and rare memorabilia. Shuttle bus will be available to transport Alumni to and from the event. *Must be AFS Alumni to attend. Ticketed Event - $145 Shuttle bus will be located at the Wells Street entrance at 5:30 p.m. Departure at 5:45 p.m.*

Thursday, April 25, 2024

7 – 8 a.m.

Room: 103CD – Level 100

Author Chair Breakfast

This breakfast is for AFS speakers, session chairs, students and staff to meet and coordinate details for the day's educational sessions.

7 – 8 a.m.

Room: 102ABCDE – Level 100

Copper Breakfast

The Copper Division will present their annual awards during the breakfast. The breakfast is open to everyone with an interest in copper alloys. *Ticketed Event – $65*

7 a.m. – Noon

Foyer – Level 200

Registration Open

7: 30 – 10:30 a.m.

Foyer – Level 200

Coffee Station by Registration and AFS Technical and Management Sessions

Coffee sponsored by:

Albarrie

SILVER NEEDLE INC

7: 30 a.m. – Noon

Atrium – Level 200

AFS Store Open

Events | Technical Track | Management Track | AFS Institute | Casting Designers & Buyers

8 – 9 a.m.

Aluminum & Light Metals Division

Room: 202AB – Level 200

Session Chairs:

Anthony Lindert
Oshkosh Corp., Oshkosh, WI

Matthew Gavin
Audubon Metals LLC, Henderson, KY

Investigation of Heat Treatment on Silicon Carbide Composite Compared with Silicon Nitride Composite for Reinforced Aluminum Matrix *(24-057)*

Moe Rabea, Dhruv Madiraju, Conner Neely, and Daniel Skeldon, Mechanical Engineering, Cal Poly Pomona, Pomona, CA

The purpose of this study is to determine the additional effect of heat treatment on the hardness, corrosion resistance, and mechanical strength of cast aluminum matrix composites reinforced with SiC. Additionally, this study investigated the strength and hardness of both silicon carbide (SiC) and silicon nitride (Si3N4) reinforced aluminum composites and compared with previous research conducted in the lab, where only silicon carbide was added. Silicon nitrides are a group of advanced engineering ceramics with high strength, fracture toughness, hardness, wear resistance and good chemical and thermal stability.

In-situ Solidification Processing and Characterization of A535 Al-alloy Metal Matrix Composites Containing SiOC Particles *(24-078)*

Nagaraj Chelliah, Omid Ghaderi, and Pradeep Rohatgi, University of Wisconsin-Milwaukee, Milwaukee, WI; Arul Pandian, PSG College of Technology, Coimbatore; David Weiss, Vision Materials, Manitowoc, WI

The present study explores the feasibility of incorporating poly(methylhydrosiloxane) (PHMS) into A535 Al-alloy melts via polymer injection pyrolysis approach to synthesize in-situ ceramic particles. 2wt% of cross-linked solid PHMS was added to A535 melts by stir and ultrasonic mixing and cast into preheated (200oC) cylindrical steel molds. Microstructural analysis revealed α-Al grains, Al-Mg intermetallics and ceramic particles segregated mainly along the grain boundaries after solidification. Grain size decreases from 140µm to 60µm because of the addition of polymer to the melt. Also, XRD study indicates the presence of SiO2, SiC and Al3C4 phases. Mechanical testing showed that Vicker's microhardness and yield strength increased from 76HV to 87HV, and from 95MPa to 129MPa, respectively because of addition of polymer to the melt. Improvement in mechanical properties is mainly attributed to reduction in grain size and presence of hard ceramic particles formed as result of addition of polymer which pyrolyzed.

Cast Iron Division

Room: 202DE – Level 200

Session Chairs:

Lizeth Medina-Balliet
Neenah Foundry Co., Neenah, WI

Eric Nelson
Eric Nelson Consulting LLC, Mankato, MN

Industry 4.0 Adoption Using AI/ML Driven Metamodels for the High-performance Ductile Iron Sand Castings Design and Manufacturing *(24-114)*

Jiten Shah, Product Development & Analysis LLC, Naperville, IL; Brian Began, American Foundry Society, Inc., Schaumburg, IL

Data-centric near real-time intelligent process control for smart manufacturing in an Industry 4.0 era is of tremendous value. Design and manufacturing of high-performance ductile iron sand castings is a multi-variant complex process with many uncertainties involved. As a result, despite a well-controlled operation and an experienced workforce, iron foundries in a production environment do face sporadic shrinkage and lots with nonconforming properties requirements, resulting in scrap or rework. A framework and methodology consisting of AI (Artificial Intelligence) and ML (Machine Learning) tools, coupled with ICME (Integrated Computational Materials Engineering) and process simulation tools will be presented to quantify uncertainty (UQ) Metamodels, both predictive and prescriptive in near real time are developed using such AI/ML techniques using production historical and selective DOE generated additional data. The proposed framework and approach is applicable to solve such complex problems with uncertainty in metalcasting design & manufacturing.

Panel: Cast Iron Production & Processing Issues with Solutions *(24-171)*

Julia Scruton, Baker Manufacturing Co., Evansville, WI; Stuart Gujral, Emerson Automation Solutions Appleton Group, South Milwaukee, WI; Mariusz Bronkowski, Charter Dura-Bar, Des Plaines, IL

- **Investigating Contamination of Raw Materials *(24-171a)***
  Julia Scruton, Baker Manufacturing Co., Evansville, WI
- **Dealing with Historic Undocumented Quality Issues *(24-171b)***
  Stuart Gujral, Emerson Automation Solutions Appleton Group, South Milwaukee, WI
- **Eliminating Porosity at the Center Ductile Bars with Consistent Process Control *(24-171c)***
  Mariusz Bronkowski, Charter Dura-Bar, Des Plaines, IL

Engineering & Smart Manufacturing Division

Room: 201C – Level 200

Session Chair:

Tom Doré
Crystal Lake, IL

2024 Plant Engineering Award: Melting Modernization and Foundry Transformation *(24-168)*

Sahil Makwana and Tarun Jaju, Bingham & Taylor Corp., Rocky Hill, CT

The Bingham & Taylor Culpeper foundry transformation, undertaken amidst the COVID-19 pandemic, showcases a multi-phase upgrade of mid-20th-century technology to the current state-of-the-art. The project, costing over $24 million, was executed with a focus on improving employee safety, environmental performance, product quality and consistency, and operational efficiency.

Safety enhancements were marked by a significant reduction in the Total Recordable Incident Rate and in Days Away Restricted Time. The upgrade to Electric Furnaces led to a 92% reduction in confined space entries and a 93% decrease in silica-containing reline material, greatly contributing to compliance with silica standards.

Environmental improvements included a 93% reduction in particulate matter emissions per ton of metal melted and the elimination of various toxic emissions, allowing B&T to move towards Synthetic Minor Status. The foundry generated 52% less sand and slag per month and saw a 26% reduction in waste disposal expenses.

In terms of quality, consistency, and efficiency, the upgrades led to a significant improvement in lbs/labor hour efficiency and a reduction in scrap rate. Electric Melt Furnaces increased annual capacity fourfold, allowing the introduction of a new shift and reducing lead times by 64%, resulting in a 96% on-time delivery rate in 2023 and a 50% reduction in customer complaints. The foundry's transition from a Cupola to Electric Induction Furnaces was innovative and executed with internal resources, ensuring minimal production disruption.

The transformation was characterized by simultaneous project execution, compliance with regulations, on-time completion without customer delivery interruptions, and an all-company engagement, including advanced and accelerated training, with no injuries reported throughout the project. This comprehensive upgrade signifies a leap in technology and operational capability for Bingham & Taylor.

Metalcasting Research

Room: 201AB – Level 200

Session Chair:

Jeremy Lipshaw
Aalberts Surface Technologies, Livonia, MI

Cast Metal-Ceramic Lattice Structures for Lightweight Energy Absorbing and/or Penetration Resistant Structures *(24-067)*

Alan Druschitz and Manuel Umanzor, Virginia Tech, Blacksburg, VA

Cast metal-ceramic lattice structures were produced using 3D printed sand molds from a variety of metals (ferrous and non-ferrous) and ceramic/hard metal tiles. The 3D printing technique was binder jetting and both furan and phenolic urethane binders were used in conjunction with silica sand. The lattice structure properties (deformation in compression and penetration resistance) were determined and then models were developed to allow optimization of the structures and to allow designers to develop lattice structures tailored to specific applications. The cast metal-ceramic lattice structures were demonstrated to 1) reduce the weight of a component (since the majority of the structure is open space) while maintaining as good or better penetration resistance and 2) have superior penetration resistance compared to a solid piece of metal.

Upcycling of Low-Quality Aluminum Automotive Scrap – The DNA of Twitch *(24-026)*

Shrivatsav Shankar and Diran Apelian, Advanced Casting Research Center, Irvine, CA

As our consumption of aluminum continues to grow the demand to maximize the use of aluminum scrap grows proportionally. This includes using all aluminum scrap, especially low-quality aluminum scrap. Automotive aluminum scrap from auto shredders dubbed "Twitch" is an amalgamation of aluminum alloys that are traditionally melted and downcycled to a low-value alloy. The Advanced Casting Research Center is working towards upcycling twitch to develop a high-value green aluminum alloy made from 100% twitch utilizing liquid metallurgy methodologies and ICME. Twitch has been collected over a period and from the two coasts of the USA – geographical and temporal perspectives. An analysis of Twitch as is collected and the metallurgical pathways to upcycle to high-value Al alloys is presented and discussed.

Molding Methods & Materials Division

Room: 202C – Level 200

Session Chair:

Greg Jarski
American Colloid Co., Iron Mountain, MI

Comparing Hot Friability Test Data to Results from a Green Sand Erosion Casting Trial *(24-060)*

Sam Ramrattan and Shantanu Phalke, Western Michigan University, Kalamazoo, MI; Peter Nakachima, Sintex Minerals & Services Inc., Rosenburg, TX

The greatest proportion of sand/metal defects occurs with the green sand process. Sand in the foundry industry no longer means just silica and specialty sands. Today, there are several other materials both natural and synthetic that are candidates for replacing silica sand. This paper addresses green sand erosion issues for iron castings. Green sand erosion can occur when molten alloy dislodges grains of sand, resulting in a rough as-cast finish. A casting trial developed at WMU was used to evaluate erosion on multiple green sand specimens simultaneously. A gray cast iron recipe was delivered from a controlled head pressure and temperature to achieve a turbulent flow across green sand specimens prior to solidification of the casting. The hot friability test data were evaluated along with results of iron casting trials. Results show that there are surface differences among the green sand systems studied.

Thermal Distortion Testing at Ferrous Superheat Temperatures *(24-062)*

Sam Ramrattan, Robert Makin, Zachary Tay, and Shantanu Phalke, Western Michigan University, Kalamazoo, MI

Thermal distortion testing is an American Foundry Society (AFS) standardized test for chemically bonded sands. The device can accommodate an AFS standard 50 mm disc-shaped specimen that is 8 mm thick. The specimen is automatically brought into direct symmetrical contact with a hot surface. The machine applies a ramping force to the specimen which represents a hydrostatic head pressure experienced by a core and mold wall during filling with cast alloys. Further, the machine maintains a constant force signifying filled mold through casting solidification. During this time the instrumentation is designed to capture temperature from the specimen both longitudinal (axial) and radial movement in the specimen. Until now the maximum test temperature was 1000°C (1832°F) which underestimates a ferrous superheat temperature. In this study results show interesting graphical representations of the amplified thermal-mechanical distortions in various polyurethane cold-box sand systems at cast iron and steel interfacial superheat temperatures.

8 – 10:15 a.m.

The AFS Institute

Room: 201DE – Level 200

Casting Material Properties *(24-138)*

Patrick Kluesner, Grede Castings, Southfield, MI

This course provides an in-depth discussion on expected performance of a casting. The production process influences the resulting mechanical properties and expected level of quality. The impacts of irregularities and post casting treatments is discussed along with testing methods for determining properties and existing sources of property information that can be used in the casting's design.

9 a.m. – Noon

Hall AB – Level 300

Exhibits Open

9 – 9:30 a.m.

Casting Designers & Buyers

Casting Source Theater in the AFS Hub Hall AB – Level 300

Session Chair:

Ben Yates
American Foundry Society, Schaumburg, IL

From the Publication: Equipping Engineering to be Effective *(24-157)*

Ted Schorn, Enkei America Inc., Columbus, IN

Foundries utilize process and/or quality engineers often with vague descriptions of their role. Sometimes they see their job as simply, "keeping things running smooth" or "making things better." This can mean a very incomplete understanding of what is needed and overlap and confusion as to how the engineers relate to other support resources. In "Process Control for Engineers", Schorn first takes up the important task of sorting out what process and quality engineers ought to be doing and how they should relate to one another and the rest of the organization. Grasping these roles with clarity permits both accountability and competence development.

9:15 – 10:15 a.m.

Additive Manufacturing Division

Room: 202AB – Level 200

Session Chair:

Marshall Miller
3D Systems, Rock Spring, GA

Testing Methods for Characterization of Additively Manufactured Investment Casting Tooling *(24-147)*

Nicholas Costleigh, University of Northern Iowa, Waterloo, IA

Additive manufacturing of photopolymer resins is emerging as a method to produce intricate expendable patterns with high dimensional accuracy. Material characterization is the first step in perfecting the usage of this method. This presentation will delve into testing methodologies the University of Northern Iowa uses to characterize these materials. Particularly, measurements that describe the compatibility of a material for shelling and burnout processes will be covered. The data collected can be used to support simulation software material information to create more representative simulations of the investment casting process.

Additive Manufacturing Division

Room: 202AB – Level 200

Session Chair:

Marshall Miller
3D Systems, Rock Spring, GA

Understanding the Factors Driving the Force Exerted on an Investment Casting Shell by Thermal Expansion of a Printed Pattern *(24-144)*

Tom Mueller, Mueller AMS, New Berlin, WI

The leading cause of failure when casting printed investment casting patterns is the cracking of the ceramic shell due to thermal expansion of the pattern during autoclave de-wax. Shell cracking can largely be avoided through the use of hollow build styles, careful selection of pattern material, and venting of the shell. However, the process changes required to avoid shell cracking add both cost and time to the casting process as well as making it virtually impossible to automate to the level that has been achieved for molded wax patterns. Consequently, printed patterns are used, with few exceptions, only for prototypes and very low volume production. In this study, the factors contributing to the force are identified and an expression is developed to predict the force on the shell as a function of temperature. The expression is used to determine the sensitivity of the exerted force to each primary factor.

Cast Iron Division

Room: 202DE – Level 200

Session Chairs:

Angella Sell
Aalberts Surface Technologies, Livonia, MI

Brad Steinkamp
Charter Dura-Bar, Crystal Lake, IL

Preliminary Evaluation of a Low Cost, Austenitic, Ductile Iron *(24-081)*

Alan Druschitz and Victoria Rambo, Virginia Tech, Blacksburg, VA; Josh Adelmann, SSAB, Saraland, AL

An austenitic ductile iron that does not contain nickel would be a significant achievement since it would reduce cost by eliminating the use of expensive alloying elements. A preliminary evaluation of ductile irons alloyed with 7.5-12 wt% manganese, 1.8-2.0 wt% aluminum, 2.7-2.8 wt% Si, and no nickel has been completed. X-ray diffraction indicated that the microstructures of these ductile irons are predominantly austenite with a small amount (<7%) of martensite/ferrite. The higher manganese ductile iron hardened slightly when heat treated and the lower manganese ductile iron softened significantly when heat treated. Additional chemistries will be investigated.

Cast Iron Division

Room: 202DE – Level 200

Session Chairs:

Angella Sell
Aalberts Surface Technologies, Livonia, MI

Brad Steinkamp
Charter Dura-Bar, Crystal Lake, IL

Using Computer Simulation to Determine Core Plane Flatness in Disc Brake Rotors *(24-021)*

Alan Crawford, Waupaca Foundry, Waupaca, WI

Discussion will investigate the feasibility of using the stress simulation module computer simulation to look at core plane flatness in a disc brake rotor. Core plane flatness is a measurement taken to determine how flat the inside plates of a disc brake rotor are compared to the midplane locator between the plates, with the intent of having this measurement be as flat as possible to eliminate balance problems. This is directly influenced by the strength of the core and any movement generated during the filling and solidification stages of making the casting.

Metalcasting Research

Room: 201AB – Level 200

Session Chair:

Mark Osborne
Wabtec, Haslet, TX

Producing Castings with Nano Reinforcements-Challenges and Opportunities *(24-105)*

David Weiss, Vision Materials, Manitowoc, WI

Nano reinforcement of aluminum casting alloys can offer a significant property improvement to the base material, including high-static and dynamic strengths and improved castability. From a practical standpoint, the successful manufacture of MMNC's rely on three important technical achievements: 1) Getting the particles into the melt; 2) Dispersing the particles within the melt; and 3) Even dispersion of particles into the solidifying casting. The specific objectives of this project were to develop more effective ways to deliver particles into the melt and to insure their even dispersion. While not all of the techniques attempted were successful, significant progress was made with some of them, resulting in the production of a number of sample castings that demonstrated higher mechanical properties and importantly, the ability to easily cast strong, difficult to cast materials that had challenging geometries.

Introduction of New AMC Investment Casting Project Objectives, Deliverables and Timeline *(24-148)*

Jiten Shah, Product Development & Analysis LLC, Naperville, IL

In November 2023, a 5-year American Metalcasting Consortium (AMC) research project focused on critical portions of the investment casting process commenced. The project has three primary tentacles with goals to improve recycling of alumino-silica (and other) shell materials, evaluate new materials and processes for more rapid shell production, and the generation of an improved tool for risering those less common alloy and shell material combinations, where trusted feeding information is less available. This presentation will introduce the project team with members from AFS, PDA LLC, UNI, California State Polytechnic University, Pomona, and industrial partners while laying out the project timeline and advising on how to get involved. This AFS-led project is funded as part of AMC's Emergent Metal Casting Solutions (EMCS) program sponsored by the Defense Logistics Agency Troop Support, Philadelphia, PA and the Defense Logistics Agency Research & Development (R&D) Office, Ft. Belvoir, VA.

Steel Division

Room: 202C – Level 200

Session Chair:

Robert Tuttle
Western Michigan University, Kalamazoo, MI

Panel: Steel Deoxidation – Theory & Practice *(24-131)*

Robert Tuttle, Western Michigan University, Kalamazoo, MI; Haakon Mauset, Elkem ASA, Silicon Products Division, Kristiansand

Deoxidation of steel plays a crucial role in determining casting quality. This panel covers some of the theory, but practical aspects of deoxidation. Addition rates, impact on oxides formed and common strategies employed. Panelists will provide their perspectives and answer questions on deoxidation.

9:30 – 9:40 a.m.

Casting Source Theater in the AFS Hub
Hall AB – Level 300

AFS Store Raffle

Join us at the AFS Hub for the AFS Store Raffle! One lucky winner gets a free book of their choice. Enter by filling out an entry form or dropping off your business card at the AFS Store. Choose your prize before Metalcasting Congress ends - no pre-order books or rainchecks will be given. Must be present to win. All entrants will be added to AFS mailing lists unless choosing to opt out.

10:30 – 11:30 a.m.

Keynote

Ballroom AB – Level 100

Effective Succession Strategies for Manufacturers of Every Size *(24-129)*

Merideth Elliot Powell, Business Growth Strategist and Author of "Who Comes Next: Leadership Succession Planning Made Easy"

Meridith Elliott Powell is an award-winning author, keynote speaker, and business strategist. With a background in corporate leadership and sales, her career expands over several industries, including banking, healthcare, and finance. Powell worked her way up from entry-level jobs to earn her position in the C-Suite.

She is a member of the Speaker Hall of Fame, Vice Chair of the National Speakers Association, a Master Certified Business Growth Strategist, a Certified Executive Coach, and a Certified Speaking Professional. In addition, Powell is an invitation-only author for LinkedIn, with more than 600,000 learners taking her courses around the world.

Noon

Metalcasting Congress 2024 Concludes

Schedule is subject to change.

2024 Showfloor Map

Supplier Exhibitor Booth List - Alphabetical

As of 2/26/2024

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3D Systems*	253

A

AW Bell Machinery*	242
ABP Induction LLC*	**219**
Abrasive Technology*	723
Acme Manufacturing	619
ACT Robots Inc.	837
Advanced Tooling Inc.	653
Affival/Opta Group LLC*	454
AFS Institute*	429
Ajax TOCCO Magnethermic Corp.*	203
Albarrie Environmental Services Ltd.*	613
Allied Mineral Products Inc.*	509
American Colloid Co.*	714
American Foundry Society (AFS)*	429
American Metalcasting Consortium	232
AMETEK Land Inc.	729
AMV Soluciones	250
Anderson Laboratories Inc.	735
Anoplate Corporation	352
Asbury Carbons Inc.*	247
ASK Chemicals*	428
ATD Engineering & Machine*	409

B

B&L Information Systems Inc.*	**511**
Badger Mining Corp.*	235
Blasch Precision Ceramics Inc.	650
Blast Cleaning Technologies*	**202**
Bondtech Corporation*	743
Bronco Blast Equipment	213
Bruker AXS Inc.	840

C

CADDIS Systems*	742
California Metal-X*	747
Capital Refractories Inc.*	737
CARBO*	655
Carpenter Brothers Inc.*	808
Carrier Vibrating Equipment Inc.*	521
Champion Chisel Works	554
Chesapeake Specialty Products Inc.*	614
Clansman Dynamics USA*	330
CMH Manufacturing Co.	754
Cometel Recycling Solutions SA	243
Conveyor Dynamics Corp.*	522
Covia*	734

D

Dante Machine & Service LLC*	550
Del Sol Industrial Services Inc.	608
DIAMANT Polymers Inc.	622
Didion International Inc.*	522
DISA*	334
DORAL Corp.*	834
Dustmaster Enviro Systems*	733

E

Eirich Machines Inc.*	615
EKK Inc.	357
Electric Controls & Systems Inc.*	605
Electrotherm India Ltd.	833
Elektrim Motors	518
Elemental Metals*	745
Elkem Silicon Products*	503
Empire Systems Inc.	353
Empire Wheel Blast Systems	556
EMSCO Inc.*	209
Engis Corporation*	710
Equipment Manufacturers Intl. Inc.*	423
Ervin Industries Inc.	612
ETA Engineering Inc.*	214
Everett Industries LLC*	624
Exact Metrology: A Division of In-Place Machining Company	820
ExOne*	709
EZG Manufacturing*	318

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Ferroglobe	746
Finite Solutions Inc.*	809
FISA North America Inc.*	519
Flexovit USA Inc .	813
Flow Science Inc.*	418
Foseco*	**621**
Foundry Lab	251
Foundry Solutions Metallurgical Services Inc.*	424
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G

Gemco Engineers BV*	452
General Kinematics Corp.*	**205**
Goff Inc.	413
Gradmatic Equipment Inc.	419
Green Diamond Performance Materials*	610
GreenSand Controls Inc.*	455
Griffin Tool Inc.	210
Guardian Software Systems Inc.*	311

Platinum Sponsor **Gold Sponsor** **AFS Member***

H

HA Group*	303
HeatTek Inc.	308
Heraeus Electro-Nite Co.*	552
The Hill & Griffith Co.*	829
Hirado Kinzoku Kogyo Co. Ltd.	823
Hitachi High-Tech America Inc.	220
Honsa Ergonomic Technologies LLC*	657
Hoosier Pattern Inc.*	514
HoT Ideas LLC*	713
Humtown Products*	635
Hunter Foundry Machinery Corp.*	705
HWI a member of Calderys*	814

I

IRB Inc.	451
I2r Power*	525
IACMI - The Composites Institute	756
Induction Iron Inc.*	523
Induction Technology Corp.*	744
Inductotherm Corp.*	305
Industrial Vacuum Equipment Corporation	412
Innerspec Technologies	824
ITOCHU Ceratech Corp.	620

J

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JOEST Inc.*	405
Joy Mark Inc.*	515

K

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Kodiak Group*	524
Kore Mart Ltd.*	722
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Kuttner North America*	724

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LAEMPE REICH*	403
Larpen Metallurgical Service*	415
LECO Corporation*	818
LightSpeed Concepts Inc.*	508
Lincoln Electric Automation Inc.*	310
LPM North America Inc.*	322
LS Industries*	212

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MAGMA Foundry Technologies Inc.*	434
Matthews Additive Technologies*	505
MB Metal Technologies LLC	240
Michigan Pneumatic Tool Inc.*	851
Midwest Industrial Metals	712
Miller and Company*	425
Miracle Steel-KOTAR*	211
Mono Ceramics Inc.	850
MPM Infosoft Pvt. Ltd.*	725
Multi-Vac a division of M & W Shops*	810

N

Nederman MikroPul*	332
Ningbo Coway Surface Treatment Technology Co. Ltd.	553
Ningbo Jingzhi Mould Co. Ltd.	821
Non-Ferrous Founders Society	245
Norican Group*	334
Norton | Saint Gobain Abrasives Inc.	410
NovaCast Solutions USA Inc.*	618
Novis Works LLC*	625

O

OmniSource Corp.	325
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Otto Junker USA*	229

P

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Palmer Mfg. & Supply Inc.*	246
Pangborn Corp.*	830
Perennial Group	453
Pillar Induction*	203
ProFound Alloys LLC	215
ProService SRL	852
PushCorp Inc.	408
Pyrotek Inc.	847

Q

Q&F Engineering	752
Quad City Safety Inc.*	336

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Red Sky Lighting LLC*	741
REFCOTEC Inc.*	603
Refractory & Insulation Supply Inc.*	815
Reichmann & Sohn GmbH/MAUS	244
Rima Industrial S/A	757
Rotavi Industrial	842

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Saint-Gobain Ceramics & Plastics*	208
Savelli Technologies S.r.l.*	423
Saveway USA Corp.	421
The Schaefer Group*	845
Schust*	252
Scientific Dust Collectors*	740
SELEE Corporation*	825
Shells Incorporated	231
Simpson Technologies Corp.*	334
Sintex Minerals & Services Inc.*	335
Sinto America*	329
SIR Robotics Inc.*	321
Smart Sand*	225
Sociedad Mexicana de Fundidores (FundiExpo)	855
Southeastern Foundry Products & Foundry Coatings Inc.*	609
Spectro Alloys Inc.	843
STRATECASTS	233/244
Summit Foundry Systems Inc.*	819
Sun Metalon*	753
Supreme Cores*	557
Suzhou Weijing Automation Co. Ltd.	731

Synchro ERP Ltd.* 708
SYSCON Sensors* 728

T

TEMC Metal & Chemical Corp.* 828
Thermo Fisher Scientific 314
Thermotec LLC* 720
ThermTech of Waukesha 218
Tinker Omega Sinto* **328**
Tradesmen International* 312
Transmet Corp. 812
Transvalor Americas Corp.* 420
Trebi North America Inc.* 241

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Versatile Equipments Pvt. Ltd. 841
Versevo Inc.* 629
VIBROTECH Engineering* 236
Viking Technologies* 703
Viking Wheel Blast Systems* 718
VJ Technologies Inc.* 324
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W

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Wheelabrator Group* 334
Whiting Equipment Canada Inc. 520
WINOA USA 309

Y

Youngstown State University 854

Z

ZEISS Industrial Quality Solutions* 654

Supplier Exhibitor Booth List - Category

As of 2/26/2024

Alloys/Materials – Aluminum

AFS Institute*	429
Anderson Laboratories Inc.	735
Anoplate Corporation	352
California Metal-X*	747
Capital Refractories Inc.*	737
Carpenter Brothers Inc.*	808
Cometel Recycling Solutions SA	243
Elemental Metals*	745
Ferroglobe	746
Foseco*	**621**
The Hill & Griffith Co.*	829
Jinan Shengquan Group Share-holding Co. Ltd. (SQ Group)	822
King Tester Corp.*	510
Matthews Additive Technologies*	**505**
Nederman MikroPul*	332
Non-Ferrous Founders Society	245
OmniSource Corp.	325
PADNOS*	223
Perennial Group	453
Pyrotek Inc.	847
Spectro Alloys Inc.	843
Sun Metalon*	753
Trebi North America Inc.*	241
VJ Technologies Inc.*	324

Alloys/Materials – Copper-Base

AFS Institute*	429
Anderson Laboratories Inc.	735
Asbury Carbons Inc.*	247
California Metal-X*	747
Capital Refractories Inc.*	737
Elemental Metals*	745
Matthews Additive Technologies*	**505**
Non-Ferrous Founders Society	245
OmniSource Corp.	325
PADNOS*	223
Saint-Gobain Ceramics & Plastics*	208
Sun Metalon*	753

Alloys/Materials – Iron

AFS Institute*	429
Allied Mineral Products Inc	509
Anderson Laboratories Inc.	735
Asbury Carbons Inc.*	247
Capital Refractories Inc.*	737
Carpenter Brothers Inc.*	808
Elemental Metals*	745
Elkem Silicon Products*	503
Engis Corporation*	710
Ferroglobe	746
Foseco*	**621**
HA Group*	**303**
Jinan Shengquan Group Share-holding Co. Ltd. (SQ Group)	822
Larpen Metallurgical Service*	415
Miller and Company*	425
Ningbo Coway Surface Treatment Technology Co. Ltd.	553
OmniSource Corp.	325
Q&F Engineering	752
Rotavi Industrial	842
Suzhou Weijing Automation Co. Ltd.	731
Transvalor Americas Corp.*	420

Alloys/Materials – Magnesium

Elemental Metals*	745
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Rima Industrial S/A	757
Spectro Alloys Inc.	843

Alloys/Materials – Steel

AFS Institute*	429
Allied Mineral Products Inc	509
Anderson Laboratories Inc.	735
Anoplate Corporation	352
Capital Refractories Inc.*	737
Carpenter Brothers Inc.*	808
Ferroglobe	746
Foseco*	**621**
Induction Iron Inc.*	523
Jinan Shengquan Group Share-holding Co. Ltd. (SQ Group)	822
King Tester Corp.*	510
Larpen Metallurgical Service*	415
Miller and Company*	425
Miracle Steel-KOTAR*	211
OmniSource Corp.	325
PADNOS*	223
Saint-Gobain Ceramics & Plastics*	208
Transvalor Americas Corp.*	420
U-Metco Inc.	512
Unimetal USA Inc.*	234
USMFG Inc.*	551
WINOA USA	309

Alloys/Materials – Superalloys

Advanced Tooling Inc.	653
Anderson Laboratories Inc.	735
Capital Refractories Inc.*	737
Elemental Metals*	745
Ningbo Coway Surface Treatment Technology Co. Ltd.	553
Rima Industrial S/A	757
Saint-Gobain Ceramics & Plastics*	208

Alloys/Materials – Titanium

Cometel Recycling Solutions SA	243

Alloys/Materials – Zinc

Ningbo Coway Surface Treatment Technology Co. Ltd.	553
Non-Ferrous Founders Society	245
OmniSource Corp.	325
Spectro Alloys Inc.	843

Engineering/Capital Equipment – Casting Design

Exact Metrology: A Division of In-Place Machining Company	820
Finite Solutions Inc.*	809
MAGMA Foundry Technologies Inc.*	**434**
Online Resources Inc.*	228
Versevo Inc.*	**629**
ZEISS Industrial Quality Solutions*	654

Engineering/Capital Equipment – Cleaning, Finishing, & Shipping

AW Bell Machinery*	242
Abrasive Technology*	723
Acme Manufacturing	619
Anoplate Corporation	352
ATD Engineering & Machine*	409
Blast Cleaning Technologies*	**202**
Bronco Blast Equipment	213
Carpenter Brothers Inc.*	808
Clansman Dynamics USA*	330
Conveyor Dynamics Corp.*	522
Dante Machine & Service LLC*	550
Didion International Inc.*	522
Empire Wheel Blast Systems	556
Ervin Industries Inc.	612
Everett Industries LLC*	624
FISA North America Inc.*	519
Flexovit USA Inc.*	813
Foundry Solutions Metallurgical Services Inc.*	424
Goff Inc.	413
JOEST Inc.*	405
Lincoln Electric Automation Inc.*	310
LS Industries*	212
Michigan Pneumatic Tool Inc.*	851
Multi-Vac a division of M & W Shops*	810
Norican Group*	334
Norton | Saint Gobain Abrasives Inc.	410
Pangborn Corp.*	830
Reichmann & Sohn GmbH/MAUS	244
Viking Wheel Blast Systems*	718
Weiler Abrasives	719
Wheelabrator Group*	334

Engineering/Capital Equipment – Engineering

ACT Robots Inc.	837
Anoplate Corporation	352
Blast Cleaning Technologies*	**202**
Conveyor Dynamics Corp.*	522
Dante Machine & Service LLC*	550
Del Sol Industrial Services Inc.	608
Eirich Machines Inc.*	615
Electric Controls & Systems Inc.*	605
Elektrim Motors	518
Empire Systems Inc.	353
Empire Wheel Blast Systems	556
Equipment Manufacturers Intl. Inc.*	423
Exact Metrology: A Division of In-Place Machining Company	820
Finite Solutions Inc.*	809
General Kinematics Corp.*	**205**
HA Group*	**303**
IACMI - The Composites Institute	756
JOEST Inc.*	405
Kodiak Group*	524
Kuttner North America*	724
Lincoln Electric Automation Inc.*	310
Magaldi Technologies LLC*	319
MAGMA Foundry Technologies Inc.*	**434**
Nederman MikroPul*	332
Novis Works LLC*	625
Online Resources Inc.*	228
Palmer Mfg. & Supply Inc.*	246
ProService SRL	852
Pyrotek Inc.	847
Savelli Technologies S.r.l.*	423
Schust*	252
SIR Robotics Inc.*	321
Summit Foundry Systems Inc.*	**819**
Tinker Omega Sinto*	**328**
Versevo Inc.*	**629**
VIBROTECH Engineering*	236

Engineering/Capital Equipment – Environmental, Health and Safety

Albarrie Environmental Services Ltd.*	613
Blast Cleaning Technologies*	**202**
Clansman Dynamics USA*	330
Dustmaster Enviro Systems*	733
Electric Controls & Systems Inc.*	605
ETA Engineering Inc.*	214
Everett Industries LLC*	624
Industrial Vacuum Equipment Corporation	412
Michigan Pneumatic Tool Inc.*	851
Multi-Vac a division of M & W Shops*	810
Quad City Safety Inc.*	336
Saveway USA Corp.	421
Schust*	252
Scientific Dust Collectors*	740
Sun Metalon*	753

Engineering/Capital Equipment – Heat Treatment

Ajax TOCCO Magnethermic Corp.*	203
AMETEK Land Inc.	729
Carpenter Brothers Inc.*	808
HeatTek Inc.	308
King Tester Corp.*	510
Norican Group*	334
Schust*	252
ThermTech of Waukesha	218

Engineering/Capital Equipment – Investment Casting Equipment & Accessories

3D Systems*	253
AW Bell Machinery*	242
Ajax TOCCO Magnethermic Corp.*	203
Bondtech Corporation*	743
Cometel Recycling Solutions SA	243
EZG Manufacturing*	318
King Tester Corp.*	510
Lincoln Electric Automation Inc.*	310
Multi-Vac a division of M & W Shops*	810
Norton | Saint Gobain Abrasives Inc.	410
Sun Metalon*	753
SYSCON Sensors*	728
Thermo Fisher Scientific	314
VIBROTECH Engineering*	236

Engineering/Capital Equipment – Maintenance

Acme Manufacturing	619
Albarrie Environmental Services Ltd.*	613
Blast Cleaning Technologies*	**202**
Bronco Blast Equipment	213
Champion Chisel Works	554
Dante Machine & Service LLC*	550
DORAL Corp.*	834
Empire Wheel Blast Systems	556
EMSCO Inc.*	209
FISA North America Inc.*	519
CADDIS Systems*	742
Michigan Pneumatic Tool Inc.*	851
Multi-Vac a division of M & W Shops*	810
Nederman MikroPul*	332
Pyrotek Inc.	847

Engineering/Capital Equipment – Patternmaking & Tooling

3D Systems*	253
Foundry Lab	251
Griffin Tool Inc.	210
LightSpeed Concepts Inc.*	508
Michigan Pneumatic Tool Inc.*	851
Mono Ceramics Inc.	850
Ningbo Jingzhi Mould Co. Ltd.	821
Q&F Engineering	752
Versevo Inc.*	**629**

Engineering/Capital Equipment – Permanent Mold Equipment & Accessories

ATD Engineering & Machine*	409
Carrier Vibrating Equipment Inc.*	521
Lincoln Electric Automation Inc.*	310
LPM North America Inc.*	322
Versevo Inc.*	**629**
VIBROTECH Engineering*	236

Engineering/Capital Equipment – Robotics & Automation

AW Bell Machinery*	242
ACT Robots Inc.	837
ATD Engineering & Machine*	409
Dante Machine & Service LLC*	550
Empire Wheel Blast Systems	556
Inductotherm Corp.*	**305**
MB Metal Technologies LLC	240
Nederman MikroPul*	332
Norton | Saint Gobain Abrasives Inc.	410
Q&F Engineering	752
Reichmann & Sohn GmbH/MAUS	244
Trebi North America Inc.*	241
Versatile Equipments Pvt. Ltd.	841
Viking Technologies*	703
Youngstown State University	854

Engineering/Capital Equipment – Software

AMETEK Land Inc.	729
AMV Soluciones	250
ASK Chemicals*	428
B&L Information Systems Inc.*	**511**
EKK Inc.	357
Exact Metrology: A Division of In-Place Machining Company	820
Finite Solutions Inc.*	809
Flow Science Inc.*	418
Guardian Software Systems Inc.*	311
CADDIS Systems*	742
MAGMA Foundry Technologies Inc.*	**434**
MPM Infosoft Pvt. Ltd.*	725
NovaCast Solutions USA Inc.*	618
Online Resources Inc.*	228
SIR Robotics Inc.*	321
Synchro ERP Ltd.*	708
VCxray by Visiconsult	721

Engineering/Capital Equipment – Value-Added Services (Machining, Painting, Assembly, etc.)

Acme Manufacturing	619
ACT Robots Inc.	837
Albarrie Environmental Services Ltd.*	613
Anoplate Corporation	352
Blast Cleaning Technologies*	**202**
Bronco Blast Equipment	213
Dante Machine & Service LLC*	550
Empire Wheel Blast Systems	556
EMSCO Inc.*	209
Exact Metrology: A Division of In-Place Machining Company	820
Foundry Lab	251
Hirado Kinzoku Kogyo Co. Ltd.	823
Michigan Pneumatic Tool Inc.*	851
Nederman MikroPul*	332
ProService SRL	852
PushCorp Inc.	408
Red Sky Lighting LLC*	741
Reichmann & Sohn GmbH/MAUS	244
Tradesmen International*	312
Versevo Inc.*	**629**
VJ Technologies Inc.*	324
Youngstown State University	854

Melting/Melting Quality – Casting Quality & Testing

AMETEK Land Inc.	729
AMV Soluciones	250
DIAMANT Polymers Inc.	622
Foundry Solutions Metallurgical Services Inc.*	424
Heraeus Electro-Nite Co.*	552
Hitachi High-Tech America Inc.	220
IACMI - The Composites Institute	756
Innerspec Technologies	824
Joy Mark Inc.*	515
ProService SRL	852
SELEE Corporation*	825
SYSCON Sensors*	728
Thermo Fisher Scientific	314
VJ Technologies Inc.*	324
Youngstown State University	854

Melting/Melting Quality – Ferrous Melt Quality

Blasch Precision Ceramics Inc.	650
Heraeus Electro-Nite Co.*	552
Hitachi High-Tech America Inc.	220
Larpen Metallurgical Service*	415
ProService SRL	852

Melting/Melting Quality – Ferrous Melting

ABP Induction LLC*	**219**
Ajax TOCCO Magnethermic Corp.*	203
Ervin Industries Inc.	612
Heraeus Electro-Nite Co.*	552
HWI a member of Calderys*	814
I2r Power*	525
Inductotherm Corp.*	**305**
Magaldi Technologies LLC*	319
Norican Group*	334
Saint-Gobain Ceramics & Plastics*	208
Whiting Equipment Canada Inc.	520

Melting/Melting Quality – Ferrous Pouring

ABP Induction LLC*	**219**
Asbury Carbons Inc.*	247
Heraeus Electro-Nite Co.*	552
HWI a member of Calderys*	814
IRB Inc.	451
Inductotherm Corp.*	**305**
Jinan Shengquan Group Share-holding Co. Ltd. (SQ Group)	822
KÜNKEL-WAGNER Germany GmbH	750
ProService SRL	852
Viking Technologies*	703
Whiting Equipment Canada Inc.	520

Melting/Melting Quality – Nonferrous Melt Quality

California Metal-X*	747
DIAMANT Polymers Inc.	622
Foundry Solutions Metallurgical Services Inc.*	424
Hitachi High-Tech America Inc.	220
King Tester Corp.*	510
Palmer Mfg. & Supply Inc.*	246
Pyrotek Inc.	847
Sun Metalon*	753

Melting/Melting Quality – Nonferrous Melting

ABP Induction LLC*	**219**
Ajax TOCCO Magnethermic Corp.*	203
Asbury Carbons Inc.*	247
California Metal-X*	747
Cometel Recycling Solutions SA	243
Foundry Solutions Metallurgical Services Inc.*	424
Heraeus Electro-Nite Co.*	552
HWI a member of Calderys*	814
IRB Inc.	451
I2r Power*	525
Inductotherm Corp.*	**305**
LPM North America Inc.*	322
Saint-Gobain Ceramics & Plastics*	208
The Schaefer Group*	845
Spectro Alloys Inc.	843
Viking Technologies*	703
Whiting Equipment Canada Inc.	520

Melting/Melting Quality – Nonferrous Pouring

ABP Induction LLC*	**219**
Foundry Solutions Metallurgical Services Inc.*	424
HWI a member of Calderys*	814
Inductotherm Corp.*	**305**
LPM North America Inc.*	322
Rima Industrial S/A	757
Whiting Equipment Canada Inc.	520

Molding Processes – Centrifugal

REFCOTEC Inc.*	**603**

Molding Processes – Chemically-Bound Sand

ASK Chemicals*	428
Del Sol Industrial Services Inc.	608
HA Group*	**303**
IRB Inc.	451
JOEST Inc.*	405
Joy Mark Inc.*	515
Novis Works LLC*	625
Palmer Mfg. & Supply Inc.*	246
REFCOTEC Inc.*	**603**
Smart Sand*	225

Molding Processes – Continuous

DIAMANT Polymers Inc.	622
General Kinematics Corp.*	**205**
Magaldi Technologies LLC*	319
Transvalor Americas Corp.*	420

Molding Processes – Diecasting

General Kinematics Corp.*	**205**
The Hill & Griffith Co.*	829
Magaldi Technologies LLC*	319
Norican Group*	334
Pyrotek Inc.	847
Southeastern Foundry Products & Foundry Coatings Inc.	609
Transvalor Americas Corp.*	420
VJ Technologies Inc.*	324

Molding Processes – Green Sand

AFS Institute*	429
American Colloid Co.*	714
CARBO*	655
Del Sol Industrial Services Inc.	608
DISA*	334
Eirich Machines Inc.*	615
Equipment Manufacturers Intl. Inc.*	423
General Kinematics Corp.*	**205**
Green Diamond Performance Materials*	610
HA Group*	**303**
JOEST Inc.*	405
Joy Mark Inc.*	515
KÜNKEL-WAGNER Germany GmbH	750
Lincoln Electric Automation Inc.*	310
MPM Infosoft Pvt. Ltd.*	725
Norican Group*	334
Q&F Engineering	752
REFCOTEC Inc.*	**603**
Savelli Technologies S.r.l.*	423
Sinto America*	**329**
Smart Sand*	225
Southeastern Foundry Products & Foundry Coatings Inc.	609
Summit Foundry Systems Inc.*	**819**
Versatile Equipments Pvt. Ltd.	841

Molding Processes – Investment

Southeastern Foundry Products & Foundry Coatings Inc.	609
Transvalor Americas Corp.*	420

Molding Processes – Lost Foam

CARBO*	655
LPM North America Inc.*	322
REFCOTEC Inc.*	**603**
Southeastern Foundry Products & Foundry Coatings Inc.	609

Molding Processes – Permanent Mold

ATD Engineering & Machine*	409
LPM North America Inc.*	322
REFCOTEC Inc.*	**603**
Southeastern Foundry Products & Foundry Coatings Inc.	609
Versevo Inc.*	**629**

Molding Processes – Vacuum Processes (sand or metal mold)

Eirich Machines Inc.*	615
Green Diamond Performance Materials*	610
REFCOTEC Inc.*	**603**
Sinto America*	**329**

Sand Mold/Core Making – Additive Manufacturing

3D Systems*	253
Covia*	734
HoT Ideas LLC*	713
Humtown Products*	**635**
LightSpeed Concepts Inc.*	508
Matthews Additive Technologies*	**505**
Shells Incorporated	231
Smart Sand*	225
Voxeljet America Inc.*	411
Youngstown State University	854

Sand Mold/Core Making – Core Machines

ATD Engineering & Machine*	409
Del Sol Industrial Services Inc.	608
Equipment Manufacturers Intl. Inc.*	423
LAEMPE REICH*	**403**
Palmer Mfg. & Supply Inc.*	246
Q&F Engineering	752
Sinto America*	**329**

Sand Mold/Core Making – Coremaking

ASK Chemicals*	428
Chesapeake Specialty Products Inc.*	614
Covia*	734
ExOne*	709
Green Diamond Performance Materials*	610
HA Group*	**303**
Humtown Products*	**635**

IRB Inc. 451
Jinan Shengquan Group Share-holding Co. Ltd. (SQ Group) 822
Kore Mart Ltd.* 722
LAEMPE REICH* **403**
Novis Works LLC* 625
Shells Incorporated 231
Smart Sand* 225
Supreme Cores* 557
Trebi North America Inc.* 241

Sand Mold/Core Making – Rapid Prototyping

3D Systems* 253
Covia* 734
Hoosier Pattern Inc.* **514**
Humtown Products* **635**
Kore Mart Ltd.* 722
Youngstown State University 854

Sand Mold/Core Making – Sand Molding Equipment

Del Sol Industrial Services Inc. 608
DISA* 334
Eirich Machines Inc.* 615
Empire Systems Inc. 353
KÜNKEL-WAGNER Germany GmbH 750
LAEMPE REICH* **403**
Magaldi Technologies LLC* 319
Palmer Mfg. & Supply Inc.* 246
Sinto America* **329**
Summit Foundry Systems Inc.* **819**
TEMC Metal & Chemical Corp.* 828
Tinker Omega Sinto* **328**

Sand Mold/Core Making – Sand Preparation & Testing

American Colloid Co.* 714
Badger Mining Corp.* 235
CARBO* 655
Covia* 734
Eirich Machines Inc.* 615
General Kinematics Corp.* **205**
IRB Inc. 451
ITOCHU Ceratech Corp. 620
Kore Mart Ltd.* 722
KÜNKEL-WAGNER Germany GmbH 750
REFCOTEC Inc.* **603**
Savelli Technologies S.r.l.* 423
Simpson Technologies Corp.* 334
Sintex Minerals & Services Inc.* **335**
Smart Sand* 225
Summit Foundry Systems Inc.* **819**
Versatile Equipments Pvt. Ltd. 841

Supplier Exhibitor Directory

As of 2/26/2024

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3D Systems* **253**
333 Three D Systems Cir.
Rock Hill, SC 29730-7811
3dsystems.com
(803) 207-3152

3D Systems has decades of expertise in delivering 3D printing solutions for metal casting. With our unique offering of additive manufacturing hardware, software and materials, foundries can reduce manufacturing costs and lead times while delivering complex patterns in a fraction of the time of traditional methods. Fully integrating into conventional sand casting and investment casting processes, our cutting-edge, turnkey 3D printing solutions can support your business growth, profitability and responsiveness. Learn more at www.3dsystems.com/foundries.

A

AW Bell Machinery* **242**
145 Abbotts Rd.
Dandenong South, Victoria 3175
Australia
bellmachinery.com
+61 3 9799 9555

AW Bell Machinery, Foundry Equipment Specialist.

From robotic dipping and pouring equipment to a full range of aftercast manual and automatic equipment (cut off, grinding, waterblast), our aim is to make production more efficient and safer. Our range of equipment can be customised to tackle castings of any size and complexity. We can integrate to existing processes or develop a complete automation cell solution.

With over 40 years of experience in designing equipment specifically for foundries, we pride ourselves on delivering a solution that is right for your business.

ABP Induction LLC* **219**
1460 Livingston Ave. Bldg. 200
North Brunswick, NJ 08902-1873
abpinduction.com
(732) 932-6400

ABP is a leading supplier of induction furnaces and heating systems for the metals and metalworking industries. With design, production, assembly and aftermarket services for foundries, forging and steel plants, we are experts in melting, pouring, holding and heating of iron, steel and nonferrous metals.

Abrasive Technology* **723**
8400 Green Meadows Dr.
Lewis Center, OH 43035
abrasive-tech.com
(740) 548-4100

Abrasive Technology, founded in 1971, is a global leader in superabrasive grinding and tooling. The Company's Iron Series(TM) collection of superabrasive grinding tools for the foundry market includes handheld, CNC and stand grinding wheels, as well as mandrels. The Company's diversified portfolio includes products for a vareity of applications in the material removal, aerospace, dental and medical markets. With manufacturing locations in the US and UK, Abrasive Technolgoy has grown significantly over its history and has more than 140 registered patents and trademarks.

Acme Manufacturing **619**
4240 N Atlantic Blvd.
Auburn Hills, MI 48326-1578
acmemfg.com
(248) 393-7300

Acme Manufacturing is a globally recognized machine tool builder of robotic systems, we offer turnkey solutions for material removal. We specialize in robotic grinding, polishing, buffing, and deburring applications with over 3,900 systems in the field today! We help manufacturers automate the finishing processes on Knee Implants, Hip Stems, Bone Plates, Acetabular Shells, and Spinal Implants.

ACT Robots Inc. **837**
95 Wooster Ct.
Bristol, CT 06010
actrobots.com
(860) 314-1557

ACT Robots Inc is a robotics equipment supplier as well as a turnkey integrator. We have been serving the casting industry for nearly 30 years with cells doing cutoff, rough grind, finishing, as well as a plethora of other applications. We also sell our own line of robots, positioners, and peripheral equipment which can be purchased standalone or as part of a turn key cell.

Advanced Tooling Inc. **653**
210 Kommers St.
PO Box 218
Mount Calvary, WI 53057
advancedtoolinginc.net
(920) 753-2420

TOOL & CUTTER DESIGN, MANUFACTURING, REGRINDING - CARBIDE & HSS

Affival/Opta Group LLC* **454**
210 14th St.
New Kensington, PA 15068
OptaGroupLLC.com
(414) 826-9430

AFS Institute* **429**
1695 N. Penny Ln.
Schaumburg, IL 60173
afsinc.org
(847) 824-0181

A skilled workforce allows your company to optimize production, minimize errors, and differentiate yourselves from the competition. The premier provider of education for the metalcasting industry is the AFS Institute. Hundreds of foundries, castings purchasers, and suppliers to the metalcasting industry rely on the Institute each year to train and develop their employees. In fact, the Institute has trained more than 91,000 students since 1957. To see a full catalog of AFS Institute courses and Foundry e-Learning modules, visit www.afsinc.org/AFSInstituteCatalog.

Ajax TOCCO Magnethermic Corp.* **203**
1745 Overland Ave. NE
Warren, OH 44483-2860
ajaxtocco.com
(800) 547-1527

Ajax TOCCO Magnethermic Corporation is a world leader in induction melting and heating applications in the metals industries. Our proven applications include a complete line of coreless and channel furnaces for all ferrous and nonferrous melting or holding applications. From simple melt and pour systems to sophisticated computer-controlled melt shops, Ajax TOCCO's line of equipment covers induction melting equipment of all sizes and frequencies.

Keep your equipment running & optimize productivity. Trust Ajax TOCCO to provide the equipment, services, and parts you need for your application.

Albarrie Environmental Services Ltd.* **613**
85 Morrow Rd.
Barrie, Ontario L4N 3V7
albarrie.com/products/categories/industrial-air-filtration/
(866) 269-8275

Albarrie is the ultimate solution for all your filter bag needs. We are the industry leader in manufacturing high-quality particulate filter bags and providing maintenance services for all dust collector systems. Our filter bags are specifically designed to capture and retain dust particles ensuring compliance with regulatory standards. With our comprehensive range of products and services, we are dedicated to meeting the diverse needs of our valued customers. Choose Albarrie for the best filter bag solutions and experience the difference.

Allied Mineral Products Inc.* **509**
2700 Scioto Pkwy.
Columbus, OH 43221-4657
alliedmineral.com
(614) 876-0244

Allied Mineral Products is a world leader in the design and manufacture of monolithic refractories and precast shapes. With strong sales and service teams in the foundry, aluminum, steel, heat treat/forge and industrial markets, our success is based on our dedication to Being There Worldwide with Refractory Solutions. Producing quality, consistent products is top priority at Allied and we have the products to meet your refractory needs. Our extensive product line includes innovative refractory technology and long-standing refractory alternatives.

American Colloid Co.* **714**
2870 Forbs Ave.
Hoffman Estates, IL 60192-3702
mtimetalcasting.com
(847) 851-1700

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American Foundry Society (AFS)* **429**
1695 N. Penny Ln.
Schaumburg, IL 60173
afsinc.org
(847) 824-0181

The American Foundry Society is a dynamic technical and advocacy organization that serves and represents the $50 billion metalcasting industry. AFS is the only association serving the entire industry, including all metals and processes, with a three-part focus on advocacy, education, and innovation. AFS also publishes Modern Casting and Casting Source magazines and presents Metalcasting Congress and CastExpo, the largest metalcasting trade events in North America. Founded in 1896, the organization is based in Schaumburg, Illinois, with an advocacy office in Washington, D.C.

American Metalcasting Consortium **232**
315 Sigma Dr.
Summerville, SC 29486
amc.ati.org
(843) 760-3275

The American Metalcasting Consortium (AMC) is providing direct support to the Defense Logistics Agency (DLA) through new technology and improved processes in the procurement of metalcastings to ensure warfighter readiness. AMC integrates the nation's top researchers with the CAST-IT Team of industry experts and the four leading metalcasting industry associations (American Foundry Society, Non-Ferrous Founders' Society, North American Die Casting Association, and the Steel Founders' Society of America). Advanced Technology International (ATI), a proven leader in consortia management.

AMETEK Land Inc. **729**
150 Freeport Rd.
Pittsburg, PA 15238
ametek-land.com
(412) 826-4444

AMV Soluciones **250**
Ctra Bembrive 23
Vigo, Pontevedra 36214
España
amvsoluciones.com
34 986133990

AMV Soluciones develops systems for the optimization of the foundry industry.

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Anderson Laboratories Inc. **735**
6330 Industrial Loop
Greendale, WI 53129-243
andersonlabs.com
(414) 421-7600

Metallurgical, chemical material testing laboratory. Mechanical testing. Chemical analysis. Failure analysis. Hardness testing. Metallography. Weld qualification and evaluation. Salt spray and corrosion testing. Specialty testing. Providing the knowledge that helps you make better products. Leveraging years of experience and the broad industry knowledge of our material specialists and engineers, we identify factors related to failures and determine metallurgical and mechanical root causes. We will leverage the expertise and experience of our staff to meet your unique customized testing.

Anoplate Corporation **352**
459 Pulaski St.
Syracuse, NY 13204
anoplate.com
(315) 471-6143

Since 1960 Anoplate has been providing plating, anodizing, and related chemical processing on precision machined parts including castings. In 1985 we added vacuum impregnation of castings to our diverse capability of services. Castings are not always the easiest parts to chemically process and often using vacuum impregnation to seal inherent porosity is the key to success. For our full list of services visit our website @ Anoplate.com. Serving the aerospace, defense, electronics, optics, and space applications. Fully Nadcap, ISO, FFL, and ITAR approved and certified.

Asbury Carbons Inc.* **247**
405 Old Main St.
Asbury, NJ 08802-0144
asbury.com
(908) 537-2155

Asbury Graphite established 1895 is a miner and refiner of natural and synthetic graphite with many domestic and international plants.

ASK Chemicals* **428**
495 Metro Pl. S. Ste. 250
Dublin, OH 43017-5319
ask-chemicals.com
(614) 790-3333

ASK Chemicals Group, headquartered in Hilden near Düsseldorf (Germany), is a global supplier of high-performance industrial resins and foundry materials. The company's products are mainly used in foundries and in the production of abrasives, refractories, impregnation, coatings, insulation and composite materials.

ATD Engineering & Machine* **409**
533 N. Court St.
Au Gres, MI 48703
atdemllc.com
(989) 876-7161

At ATD, we design, test, and build highly engineered custom equipment and automation for a multitude of industries which include foundry, automotive, agriculture, transportation, marine, and machining facilities. Our team of highly trained engineers and toolmakers also includes metal casting industry veterans with an extensive knowledge of core making, molding, melting, and finishing. This extensive knowledge, along with our innovative solutions, provides our customers with an optimal solution for their production facility.

B

B&L Information Systems Inc.* **511**
4707 Rambo Rd.
Bridgman, MI 49106-9723
blinfo.com
(269) 465-6207

B&L Information Systems is the global leader in cloud-based Enterprise Resource Planning (ERP) software for foundries, die casters and investment casters. Since 1976, B&L has implemented their unique ERP solutions at over 500 metalcasting operations, making their cloud-based Odyssey ERP match how metalcasters operate. With Odyssey, metalcasters maximize their resources, minimize costs, and make better decisions faster.

Badger Mining Corp.* **235**
409 S. Church St.
Berlin, WI 54923-2114
badgerminingcorp.com
(920) 361-2388

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Blasch Precision Ceramics Inc. **650**
580 Broadway
Menands, NY 12204-2854
blaschceramics.com
(518) 436-1263

Blast Cleaning Technologies* **202**
6682 W. Greenfield Ave.
West Allis, WI 53214-4960
bct-us.com
(262) 785-7577

Located in the historic Allis Chalmers manufacturing plant in West Allis, WI, the 150,000-square-foot renovated BCT facility combines an amazing manufacturing history with the space and capacity to design, build and fully test even the largest blast systems. At BCT, we develop innovative products to support all industries. We have the largest engineering and technical sales, support and service teams in the industry and an ongoing desire to make a difference with our customers. This is all part of our investment and commitment to support and meet our customer demands right here in the USA.

Bondtech Corporation* **743**
100 Valley Oak Dr.
Somerset, KY 42503
bondtech.com/autoclaves/core-leaching-autoclave/
(606) 677-2616

Bondtech Corporation doesn't just sell machinery, we custom manufacture to specification, rebuild existing machinery, and service all brands of equipment, even our competitors. The Bondtech Core Leaching and removal system is a self-contained high pressure, high temperature capable caustic autoclave system, utilized in the removal of ceramic inserts from high nickel alloy investment castings. Each system is custom designed for the application and the product processed.

Bronco Blast Equipment **213**
2124 Corporate Dr.
Waukesha, WI 53189
BroncoBlast.com
(262) 544-4211

For over 40 years, Bronco has been the trusted name in heavy-duty blast cleaning equipment. From our tumble blasts, UDD blast wheels, pass-thru machines and table blast machines to our extensive inventory of Bronco replacement parts. Our reputation is built on our technical expertise, innovation, and industry experience.

Since 1981, Bronco has been built to outperform, even in the most demanding environments. Our commitment from day one is to manufacture long-lasting, heavy-duty blast equipment that is tough enough to earn the Bronco name.

Bronco - Built to Blast

Bruker AXS Inc. **840**
5465 E. Cheryl Pkwy.
Madison, WI 53711-5373
bruker.com

C

CADDIS Systems* **742**
3225 Zimmerman Dr.
Bettendorf, IA 52722
caddissystems.com
(563) 551-6418

Caddis Systems is a leader in capturing machine data, delivering real-time insights, and enabling manufacturers to drive tangible efficiency, maintenance, and performance improvements. Caddis can be installed in minutes onto a light stack or connected directly to the machine through a non-invasive signal on the machine that is a true indicator of the machine running and cycling.

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cmxmetals.com
(323) 234-9281

CMX was founded in 1979. They developed mechanical ingot for c844 and c836 alloys, allowing their business to thrive and grow. CMX was the first manufacturer of copper-based alloys to eliminate lead use in 98% of alloys they produce. As a company who thrives on creativity and curiosity, CMX's latest achievement is a novel system for efficiently and effectively removing oxygen, hydrogen, oxides and dirt in the manufacturing process. The elimination of these forms of contamination allow CMX to manufacture copper alloys of the highest quality and mechanical properties at competitive prices.

Capital Refractories Inc.* **737**
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capital-refractories.com
(205) 443-7963

Capital manufactures, supplies and installs refractory materials and offers a range of products and services globally.

CARBO* **655**
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Many of the above bits are standard across the industry. In addition to our standard offering, Champion develops and designs customer specific tools for special applications. Champion Chisel Works, Inc. is a family owned business manufacturing products in Rock Falls, Illinois, and distributing out of multiple warehouses across the United States.

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(636) 728-8700

Conveyor Dynamics will feature its line of Vibratory Foundry Equipment. Mold Dump Conveyors, Bi-Directional Conveyors, Shakeout/Attrition Mills, Sorting Conveyors, Furnace Charging Feeders, Shot Blast Feeders, Sand Screeners, and Casting Cooling Conveyors. Unique features include variable speed and our dynamically balanced and isolated design to isolate vibration and lower foundation and installation costs.

Covia* **734**
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CoviaCorp.com
(980) 465-2052

We're Covia, founded on the rich legacy of Fairmount Santrol and Unimin. With a footprint of more than 48+ plants, 94 operating terminals and over 2,300 employees, we are the largest provider of minerals and material solutions in the industry. We are the foundry industry's largest sand supplier, and with resin-coated technology, offer a vertically integrated product portfolio. With expertise in mining along with manufacturing resin-coated sands, we develop innovative foundry products that enable our customers to enhance operational efficiency and decrease their environmental footprint.

D

Dante Machine & Service LLC* **550**
3702 Sample St. Ste. O1001
South Bend, IN 46619
dante-ms.com
(269) 769-6063

DANTE Machine & Service is an American company with knowledge and experience with over 20 years in the foundry, aerospace, naval, automotive and automation industries worldwide. We represent the best international companies from these business areas, and provide Machines, Spare Parts, Service and Consulting in all North America.

Del Sol Industrial Services Inc. **608**
PO Box 3149
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delsolservices.com
(830) 935-4430

Del Sol Industrial Services, Inc. offers a unique blend of foundry engineering, equipment, and supplies. We specialize in retrofitting existing facilities with new equipment and processes that fit the space, culture, and the budget. Additionally, we manufacture, and source robust equipment as required by the task at hand. Offerings range from no bake mixers to full sand reclamation systems, to automatic grinders...and everything in between.

DIAMANT Polymers Inc. **622**
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DISA* **334**
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LaGrange, GA 30240
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(630) 820-3000

DISA® develops and manufactures a complete range of metal casting and molding equipment, services and production solutions for the ferrous and non-ferrous foundry industries. DISA has a long-standing tradition of innovation, reliability and commitment to providing its customers with end-to-end grey iron foundry equipment — both vertical and horizontal molding. DISA has the broadest industry offer to support our customers with their current molding process through our technical expertise, parts and services and guidance.

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doralcorp.net
(414) 489-7000

Dustmaster Enviro Systems* **733**
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Pewaukee, WI 53072
dustmaster.com
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DustMASTER offers a performance proven solution for processing very difficult-to-handle waste streams–from cupola dust and foundry sand to shot blast. The DustMASTER process converts these materials into a uniform, non-dusting product that can be easily recycled, transported, and disposed of economically. DustMASTER also offers three (3) different style mixers for dry and low moisture castable refractory materials. Our Prashak horizontal shaft paddle mixer has been the mainstay in the refractory industry for the last 50 years. The Turbin pan style and Planetary mixers are also available.

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eirichusa.com
(847) 336-2444

Eirich Machines, part of worldwide Eirich Group, is an international supplier of machinery, systems, and services for material processing. In the foundry industry, Eirich specializes in systems for preparing bentonite-bonded molding sand for gray iron, steel, and non-iron castings. Our complete molding preparation systems include weighing, mixing, cooling, feeding, and testing. Our leading technology is designed to guarantee sand quality and is being used in foundries around the world. The online sand tester QualiMaster AT1 can perform six tests. Want to learn more? Stop by booth 615!

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EKK, Inc. is a global supplier of Casting Simulation Software and Consulting Services. The EKKcapcast software suite provides the ability to seamlessly setup and simulate a comprehensive set of casting processes. Finite Element Method (FEM) meshes of your part and mold are automatically created for you for the simulation of the entire process. EKK, Inc also provides engineering consulting service using EKKcapcast. Our experienced engineers help identify problems before they arise and optimize existing processes.

Electric Controls & Systems Inc.* **605**
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(205) 833-9900

EC&S Integrated Foundry Solutions is committed to the vision and innovation driving today's foundries and mills. With over four decades of experience in the development of foundries, production/process designs and equipment, integrated control systems, expansions and upgrades, EC&S is the Foundry Industry Leader in knowing and understanding the needs of our customers.

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India
electrotherment.com
912717660550

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elmetals.com
(973) 945-6723

Elemental Metals is a supplier of high purity elemental raw materials, alloys, oxides and specialty chemicals to the aerospace, medical, electronics, jewelry and alternative/renewable energy markets. They are able to offer a few grams of material for research scientists to truckload quantities for high volume production. In addition to commercially available materials, Elemental Metals also offers specialty alloys and made-to-order R&D custom alloys in various forms (including atomized powders) through their partnerships with several melt facilities.

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(440) 653-9300

Manufacturer of foundry equipment.

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ervinindustries.com
(734) 769-4600

Ervin Industries, Inc. manufactures engineered steel shot and grit for blast cleaning, shot peening and advanced metal powders. With three USA-based manufacturing plants, Ervin has the largest production capacity for steel abrasives in North America. For specialized cleaning applications that require higher corrosion-resistance, Ervin produces AMACAST stainless steel shot and AMAGRIT stainless steel grit.

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everettindustries.com
(330) 372-3700

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Cincinnati, OH 45249-1633
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(866) 722-2600

Exact Metrology: A Division of In-Place Machining Company is an ISO 9001:2015; AS 9100 certified company that offers contract measurement & scanning services, metrology equipment solutions, and hardware & software rentals. Our goal is to provide our customers with a specifically tailored solution to their measuring needs. We will come to you and can measure anything from the most intricate and demanding small parts to pieces covering areas larger than a football field. Visit our website for more details at exactmetrology.com.

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exone.com
(877) 773-9663

ExOne is now part of Desktop Metal's group of #TeamDM brands, which exist to make Additive Manufacturing 2.0 a reality so we can unlock the vast benefits of 3D printing at meaningful production volumes. Our 3D printing systems quickly transform powder materials – including, ceramics, composites, and sand – into precision parts, metalcasting molds and cores, and innovative tooling solutions. Foundries use our binder jetting technology to save time and money, reduce assembly labor, improve manufacturing flexibility, and deliver designs and products that were once impossible.

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(248) 802-9853

FEF **222**
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fefinc.org
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FEF strengthens the metalcasting industry by supporting unique partnerships among students, educators, and industry, helping today's students become tomorrow's leaders by providing scholarship and program support. FEF supports 30+ universities that have an experienced Key Professor who educates students in advanced technical skills and has a working foundry laboratory that excels in teaching metalcasting-based curriculum with oversight and support from the metalcasting industry. FEF provides students with many high-level experiences where they can meet and network with industry professionals.

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ferroglobe.com
(740) 984-2361

Ferroglobe is one of the world's largest vertically integrated producers of Silicon Metal, Ferro Silicon, Calcium Silicon and Manganese Alloys. Supplying commodity and customized specifications globally to a broad range of industries including photovoltaics, chemical silicones, Aluminum, Steel and Cast Iron Foundries. A pioneer in ductile iron treatment processes, potent inoculant compositions complemented by best-in-class continuous cast and rapidly solidified nodularizers.

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(262) 644-0785

Finite Solutions Inc. develops, sells, and supports SOLIDCast and FLOWCast, the world's first and best-selling PC-based casting simulation software. We also provide contract simulation and rigging design services. New this year is the introduction of version 9.0 of SOLIDCast and version 5.1 of FLOWCast. Both tools are full 64-bit implementations and multi-threaded for the fastest calculations on today's multi-core computers. Process flow from start to finish has been streamlined, making it easier than ever to effectively rig your castings. The PRACTICAL simulation solution.

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Angola, NY 14006-8839
flexovitabrasives.com
(716) 549-5100

Flexovit USA, Inc. is a USA-based manufacturer of high productivity abrasives for the metal casting industry. Flexovit operates a 100,000 sq. ft. ISO Certified factory, 4 Sales and Distribution Centers, and deploys a team of Technical Sales Representatives to provide support to abrasive users through a selective network of authorized Distributors in USA, Canada, and Mexico.

Flow Science Inc.* **418**
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Santa Fe, NM 87505-4750
flow3d.com/cast
(505) 982-0088

FLOW-3D CAST is a state-of-the-art metal casting simulation modeling platform that combines extraordinarily accurate modeling with versatility, ease of use, and high-performance cloud computing capabilities. For every metal casting process, FLOW-3D CAST has a workspace ready to put you on a quick, intuitive path to modeling success. With 11 process workspaces, powerful post-processing, pioneering filling and solidification and defect analysis, FLOW-3D CAST delivers both the tools and roadmap for designing optimal casting solutions.

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Foundry Lab **251**
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(510) 714-1658

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Foundry Technologies sro **233**
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G

Gemco Engineers BV* **452**
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Son, 5692 EB
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General Kinematics Corp. **205**
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Crystal Lake, IL 60014
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With the largest selection of vibratory and rotary foundry machinery equipment available in the industry, General Kinematics can create process flow improvements that will show real value to your throughput and bottom line. GK foundry equipment increases casting throughput diminishes casting damage and reduces maintenance costs. GK has helped the most profitable and efficient foundries turn their capital investments into profits.

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HeatTek Inc. **308**
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hitachi-hightech.com/us/en/
(978) 850-5580

Hitachi High-Tech America, Inc. ("HTA") is a privately-owned global affiliate company that operates within the Hitachi Group Companies. HTA sells and services semiconductor manufacturing equipment, analytical instrumentation, scientific instruments, and bio-related products as well as industrial equipment, electronic devices, and electronic and industrial materials.

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honsatools.com
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Hoosier Pattern Inc.* **514**
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Decatur, IN 46733
hoosierpattern.com
(260) 724-9430

Hoosier Pattern continues to be an industry leader for 3D sand printing by setting the bar high to exceed our customer's expectations. Our employees come from a wide range of occupations and skillsets within the additive and foundry industries. With our state-of-the-art technologies in 3D sand printing and our extensive background in tooling, we deliver the industry's best products to our customers on time and every time.

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Efficient, productive depowdering machines for 3D printed sand cores.

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Humtown is a family-owned business dedicated to serving the foundry industry with the highest-quality products possible. A manufacturer of cold box, air-set and 3D printed sand cores and molds, Humtown has the capability of producing extremely high-quality cores in a wide variety of sizes, weights and configurations. With additive manufacturing, Humtown can 3D print sand cores and molds for legacy and low volume parts along with full production quantity cores and molds. To meet tooling and rigging needs, Humtown has an on-site Pattern Shop and also offers the UNItube Blow Tube System.

Hunter Foundry Machinery Corp.* **705**
2222 Hammond Dr.
Schaumburg, IL 60196-3814
hunterfoundry.com
(847) 397-5110

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HWI is the largest supplier of refractory products and services in the United States, with a history that spans more than 150 years.

HWI has manufacturing sites and strategically placed distribution centers in the Americas, as well as the largest refractory industry research facility in North America. Serving virtually every major industry that requires refractory solutions to enhance production and protect assets, HWI is consistently recognized for its talented experts, industry firsts, and intensely driven excellence.

I

IRB Inc. **451**
22068 Canton Ct.
Farmington, MN 55024
irbinc.biz
(651) 256-4696

Founded in 2000, the mission of IRB is to supply the highest quality product to our customers along with exceptional service while maintaining competitive pricing. Providing the shortest lead times in the industry, IRB is a supplier of foundry consumables & and manufacturer of riser sleeves/feeding aids. Continuously focused on growth, IRB purchased GFP in 2008 to manufacture riser sleeves. In 2010, IRB expanded its warehouse and manufacturing space by moving their headquarters to Farmington, MN.

I2r Power* **525**
4300 Chamber Ave. SW
Canton, OH 44706
i2rPower.com
(800) 600-9000

Induction power cable reliability is critical to meeting your melt production goals. Since 2005, I2r POWER has been offering advanced power cable and electrical component solutions to foundry professionals around the globe so your equipment runs at optimum electrical efficiency with minimal loss. Every project is an engineering and design collaboration to hand-build custom cables and components from top-quality materials. Specializing in: Induction, Vacuum Induction Melting (VIM), Coreless Induction, Channel/Holding Furnace, Auto Pressure Pour Systems, and Graphite Sitrring Rod Processes.

IACMI - The Composites Institute **756**
2360 Cherahala Blvd.
Knoxville, TN 37922
iacmi.org
(865) 974-8794

IACMI-The Composites Institute, backed by the U.S. Department of Energy and Department of Defense, leads a 140+ member consortium of industry, academia, and government agencies for U.S. manufacturing advancement. Recognized for shaping America's future workforce, IACMI focuses on technology innovation, product creation, and workforce development. In collaboration with the DoD, our industry-driven METAL program (Metallurgical Engineering Trades Apprenticeship & Learning) addresses U.S. casting and forging workforce shortages. Explore METAL at iacmi.org/metal.

Induction Iron Inc.* **523**
3411 W. Fletcher Ave. A
Tampa, FL 33618-2813
inductioniron.com
(813) 969-3300

Induction Iron Incorporated was founded in 1975 and is located in Tampa, Florida with manufacturing facilities in Warren, Ohio and Evansville, Indiana. Induction Iron specializes in producing extra low carbon (typical <.006% C), high purity steel melt stock (1001) that meets exacting industry requirements with respect to cleanliness, sizing and chemical analysis. In addition to the extra low carbon melt stock, Induction Iron also produces Grade 1006, Grade 1010, Grade 1008DP, Grade 409mod and Stainless Grades 304L and 316L melt stock.

Induction Technology Corp.* **744**
22060 Bear Valley Rd.
Apple Valley, CA 92308
inductiontech.com
(760) 246-7333

Induction Heating and Melting Manufacturers.

Inductotherm Corp.* **305**
10 Indel Ave.
Rancocas, NJ 08073
inductotherm.com
(609) 267-9000

We design and manufacture the most advanced induction melting, heating, holding and pouring systems for virtually all metal and material processing. These include equipment for gray and ductile iron, steel, copper and copper-based alloys, aluminum, zinc, reactive metals, precious metals, silicon, and graphite heating, as well as numerous other special applications.

Industrial Vacuum Equipment Corporation **412**
N8150 Maple St.
Ixonia, WI 53036
industrialvacuum.com
(920) 261-1136

We manufacture rugged, industry-leading industrial vacuums, dust collection systems, and positive displacement blowers, all used on demanding projects worldwide where performance and reliability are crucial. From our state of the art facilities in Ixonia, WI USA, we design, build, and field test every heavy-duty industrial vacuum cleaner and dust collector to meet the most stringent quality standard in the manufacturing industry.

Innerspec Technologies **824**
2940 Perrowville Rd.
Forest, VA 24551
innerspec.com
(434) 948-1301

Non-Destructive Testing (NDT) instruments and automated systems featuring advanced EMAT ultrasonic testing. Innovative systems for automated cast log inspection on existing log conveyors. Also applicable for sheet ingots, both crack detection and thickness measurement.

ITOCHU Ceratech Corp. **620**
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itc-cera.co.jp/english/index.html
(332) 216-8419

J

Jinan Shengquan Group Share-holding Co. Ltd. (SQ Group) **822**
Diaozhen Industrial Park, Diaozhen
Jinan, Shandong 250204
China
e.shengquan.com
+86-0531-83512930

JOEST Inc.* **405**
800 Roosevelt Rd. Unit B400
Glen Ellyn, IL 60137
joest-us.com
(630) 469-0900

Joy Mark Inc.* **515**
5935 S. Pennsylvania Ave.
Cudahy, WI 53110-2858
joy-mark.com
(414) 769-8155

JOY-MARK, INC., and GTP Joymark, LLC now offers a complete catalog of feeding aids within the Foundry Industry to service all molding line applications. Our wide selection of insulating/exothermic risers and direct pour cups are manufactured through high quality vacuum formed and high density/precision controlled processes.

K

King Tester Corp.* **510**
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Phoenixville, PA 19460
kingtester.com
(610) 279-6010

KING Tester Corporation is the industry leader for over 88 years in Portable Brinell Hardness Testers, patented test blocks, Kingpins and microscopes. Our customers include the most prominent names in aerospace, rail, auto, foundries, steel and aluminum mills, calibration labs, oil and gas, heat treaters, wear parts, military, infrastructure, construction, and utilities. All products are made and serviced in the USA.

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Link: www.kingtester.com

Kodiak Group* **524**
5799 West M-72
PO Box 483
Grayling, MI 49738
kodiakgroup.us
(989) 344-2166

Kodiak Group is an industrial engineering design and equipment supply company. Our creative and experienced team provides innovative solutions you will not be offered elsewhere. At Kodiak Group we emphasize efficiency, economy, reliability, and safety in our design.

Kore Mart Ltd.* **722**
PO Box 175
Hamburg, PA 19526
koremart.com
(610) 562-5900

Kore Mart is a leading provider of foundry supply solutions. We maintain an extensive inventory of products and materials and also engineer innovative products tailored to meet our customer's unique needs. Committed to environmental sustainability, we recycle core sand and moldings. With over four decades of industry experience, we prioritize customer satisfaction and serve as an extension of your team by providing technical support. Contact us today to discover how Kore Mart can enhance your business. Visit koremart.com or call 610-562-5900.

KÜNKEL-WAGNER Germany GmbH **750**
Hannoversche Str 59
Alfeld 31061
Germany
kuenkel-wagner.com/en
(49) 518-1780

KÜNKEL WAGNER is your perfect partner when the situation demands economical, first-rate technology "made in Germany". Robust, dependable plant and equipment reaffirms our worldwide reputation for over 110 years. We shall continue this journey of shaping the future of foundry industry since we believe in thinking ahead.

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(262) 284-4483

Cupolas, Gas Cleaning, Heat Recovery and Process Controls

L

LAEMPE REICH* **403**
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laempereich.com
(205) 655-2121

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Larpen Metallurgical Service* **415**
1111 Western Dr. Div/Larpen Supply Co. Inc.
Hartford, WI 53027-2722
larpen.com
(262) 673-9709

Supplier of Graph-Hex carbon products and alloys to foundry and steel industry.

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Saint Joseph, MI 49085-2319
leco.com
(269) 985-5496

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LightSpeed Concepts Inc.* **508**
1600 Executive Dr.
Jackson, MI 49203
lightspeedconcepts.net
(517) 990-2333

Sustainable 3D Sand Printer for Metalcasting Agility & Lightweighting.

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3D Sand Printers for manufacturers & metalcasters who want lightweight and innovative castings in profitable markets.

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Lincoln Electric Automation Inc.* **310**
1700 Jetway Blvd.
Columbus, OH 43219-1675
rimrockcorp.com
(614) 471-5926

Rimrock, a Lincoln Electric Automation Company has been reducing industry's production costs for over 65 years by designing, manufacturing, installing, and servicing equipment focused on the foundry industry. With an abundance of experience and knowledge in ladling, material handling, and finishing, LEA has developed solutions that improve customers processes while providing exceptional return on investment. Our alliance with Austrian-based Fill Gesellschaft M.B.H allows us to offer innovative decoring products coupled with full turnkey robotic systems. Please visit our website Rimrockcorp.com.

LPM North America Inc.* **322**
27281 Las Ramblas Ste. 200
Mission Viejo, CA 92691-8303
lpm-it.com
(734) 564-8230

LPM Group is a leader in manufacturing Low Pressure and Gravity Casting machines and relevant tooling (molds and core boxes) Among the Group there are leading Companies such as FATA ALUMINUM and GFS GRAVITY (gravity and precision sand casting equipment and sand reclamation projects), CORAM (melting furnaces and degassing unit), UNIMOLDS (molds and core boxes for Gravity and LP) and FATA NANJING.

LS Industries* **212**
PO Box 1442
Wichita, KS 67201-1442
lsindustries.com
(670) 875-7997

Family owned and operated for over 45 years, LS Industries designs and manufactures custom metal finishing systems and surface treatment machinery.

M

Magaldi Technologies LLC* **319**
30000 Millcreek Ave. Unit 385
Alpharetta, GA 30022
magaldi.com
(678) 705-9219

Incorporated in 2015, Magaldi Technologies LLC is the fast-growing sales, service and local engineering arm of the Magaldi Group for the US and Canada. In North America, there are over 100 Magaldi systems in operation. These systems are improving the operations at foundries, steel mills, aluminum recycling plants, coal and biomass-fired power plants and many others. Based on the Superbelt® technology, Magaldi has developed a wide range of technological solutions to meet the most demanding requirements of foundries (ferrous and non-ferrous).

MAGMA Foundry Technologies Inc.* **434**
10 N Martingale Rd. Ste. 425
Schaumburg, IL 60173-2401
magmasoft.com
(847) 969-1001

MAGMA Foundry Technologies Inc. is part of a worldwide organization focused on providing solutions to the metalcasting industry. Our casting process simulation software, MAGMASOFT® autonomous engineering, along with our metalcasting expertise and educational platforms, provide our customers with the answers to meet their needs and resolve problems before they happen. MAGMA is committed to casting excellence.

Matthews Additive Technologies* **505**
1315 W. Liberty Ave.
Pittsburgh, PA 15226
matthewsadditivetechnologies.com
(855) 264-5200

We are a full-service provider of 3D printed molds and cores with locations in Pittsburgh, PA and Searcy, AR. Matthews has been in business for more than 170 years and we've been casting metal for nearly 100 years. Our experience as a foundry means we understand the detailed requirements of metal casting, particularly when it comes to complex parts and components. By owning and operating 10 state-of-the-art 3D sand printers at our two locations, more than anyone else serving the industry, we have the capacity to take on multiple projects at once and meet your timeline.

MB Metal Technologies LLC **240**
403 S. Hawley Rd.
Milwaukee, WI 53214-1906
markinbox.com
(414) 771-9270

Electric and Battery powered Part & Tag Marking Equipment that put in a Permanent Mark for Traceability. Portable, Benchtop and Integrated into your Process. Our products can mark Plastics and Metals to 62Rc. High Quality QR and 2d Datamatrix marks, Serialization, Date/Year codes and a variety of other options are included in the Sketchbook Software that is included with each unit. A cross section of our Products will be in our booth and powered for your review. Stop by to see us!

Michigan Pneumatic Tool Inc.* **851**
6850 Middlebelt Rd.
Romulus, MI 48174
michiganpneumatic.com
(313) 933-5890

Michigan Pneumatic Tool has been providing air tool solutions for over 77 years. MPT manufactures more than 550 models of air tools at our facility in Romulus Michigan. We also carry the largest variety of spare parts and accessories that usually ship the same day. We offer excellent in-house repair service on most all major brand name construction and industrial air tools. We provide quality New, Rebuilt, and Re-engineered pneumatic tools and those hard to find parts.

Midwest Industrial Metals **712**
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Northlake, IL 60164-1301
mimrecycles.com
(773) 202-8202

Miller and Company* **425**
9550 W. Higgins Rd. Ste. 380
Rosemont, IL 60018
millerandco.com
(847) 696-2400

Miracle Steel-KOTAR* **211**
50 Carriage Hill Ln.
Laguna Hills, CA 92653
miraclesteels.com
(714) 955-9006

Mono Ceramics Inc. **850**
2235 Pipestone Rd.
Benton Harbor, MI 49022-2425
monoceramics.com

Manufacturer of stopper rods and pouring nozzles.

MPM Infosoft Pvt. Ltd.* **725**
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Nagpur, Maharashtra 440 016
India
mpmindia.com
91 (973) 0031025

SANDMAN® is a pioneering cloud-based, software-as-a-service (SaaS), predictive, and prescriptive data analytics solution for optimizing foundry green sand system. Patented in India, USA, Europe, China, Brazil, Korea and Japan. Its multivariate analysis correlates green sand properties with casting defects, offering predictive and prescriptive recommendations for process control of system sand properties and additives. SANDMAN® sets the bar for optimized foundry green sand management through advanced machine learning driven data analytics.

Multi-Vac a division of M & W Shops* **810**
21115 Radius Bend
Union Grove, WI 53182
multivacinc.com
(262) 878-4220

Multi-Vac Industrial Vacuums have been keeping foundries clean since 1990. Designed for and around the foundry industry, our Industrial Vacuum Cleaners are built to last, just like your castings. From Molding, to Core Room, to Casting, to custom machine integration - our sales and engineering staff are committed to fitting the right machine to your operation and application. With a variety of models, capacities, and custom features, Multi-Vac units are built for reliability and longevity, giving you the most for your investment.

The Multi-Vac team is ready to get to work for you!

N

Nederman MikroPul* **332**
4433 Chesapeake Dr.
Charlotte, NC 28216-3412
nedermanmikropul.com
(704) 398-7564

Nederman MikroPul is a global organization that specializes in industrial air filtration for heavy process industries, such as metal production, power generation, mineral processing, chemical industry, and much more. Along with their successful patented pulse-jet dust collectors, Nederman MikroPul has developed a broad range of air pollution control technologies, becoming known globally for its expertise with air scrubbers, cyclones, coolers, etc. Filtration solutions vary in scope; ranging from single accessory items to complex turnkey solutions, including flame abatement technology.

Ningbo Coway Surface Treatment Technology Co. Ltd. **553**
No 18 Nanhai Rd. Xinqi St. Beilun District
Ningbo, Zhejiang
China
nbcoway.cn
0574-86556929

We're committed to provide customers with surface treatment solution; Metal surface treatment processing; the design, manufacturing, processing and sales of polishing materials, industrial cleaning agents and surface treatment agents (excluding hazardous chemicals).

Ningbo Jingzhi Mould Co. Ltd. **821**
No.78, Xiangshanhe Rd.
Industry Zone, Xiangshan County
Ningbo, Zhejiang 315700
China
jz-mold.cn
0086 135 1574 3862

Ningbo Jingzhi Mould Co., Ltd is one of the market leaders in the development, design and manufacture of moulds and tools for metal castings from China.

For many years, solutions have been developed for iron and light metal casting, among others, in the processes of sand casting, gravity die casting and lower pressure die casting to global markets.

Main Equipments: 12 sets High Speed CNC machining centers, 1 set Five-Axis deep drilling machine, 1 set Five-Axis machining center.

Quality System: ISO9001:2015. Technical Application: CAD、-CAE、CAM

Non-Ferrous Founders Society **245**
905 E. Chicago Rd. # 1
Sturgis, MI 49091
(847) 299-0950

The Non-Ferrous Founders' Society (NFFS) is the premier North American trade association for the non-ferrous metal casting industry. NFFS is a proven resource for information and services vital for effective non-ferrous foundry management. Joining NFFS provides your foundry with information and resources to help you remain competitive in a volatile business climate. Who are NFFS members? NFFS members are non-ferrous foundries, ingot manufacturers, and industry suppliers who are industry leaders committed to manufacturing superior products and providing exceptional customer service.

Norican Group* **334**
1606 Executive Dr.
LaGrange, GA 30240
noricangroup.com/en-us
(706) 884-6884

Norican Group is home to six leading, globally operating technologies: DISA, ItalPresseGauss, Monitizer, StrikoWestofen, Simpson, and Wheelabrator. Our technology sits at the heart of best practices across industries, continually pushing forward state-of-the-art. A global network of engineering expertise, manufacturing capacity, and service support ensures we are where our customers need us to be at every stage of their process and for every challenge they may face.

Norton | Saint Gobain Abrasives Inc. **410**
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Worcester, MA 01615-0008
nortonabrasives.com
(508) 795-5000

Norton, the leading brand of Saint-Gobain Abrasives, offers powerful, precise, user-friendly abrasive solutions, which enable customers to cut, shape and finish all materials in the most complex and challenging applications. From abrasive belts, discs, snagging and cut-off wheels to diamond superabrasive wheels, the Norton brand offers a full line of high performance products for Foundry and Metalcasting applications.

NovaCast Solutions USA Inc.* **618**
1952 McDowell Rd. Ste. 110
Naperville, IL 60563
novacast.se
(630) 450-1647

At NovaCast, we focus on technical solutions that reduce the environmental footprint and our mission is to contribute to a responsible foundry industry. Our goal is to inspire and innovate foundries world-wide through our products and our commitment, by guiding customers to analyze, stabilize and optimize the casting process. We call it the Good Guys' Industry.

Novis Works LLC* **625**
400 Shroyer Ave. SW
Canton, OH 44702
novisworks.com
(330) 453-4646

Novis Works, LLC is a specialty chemical company located in NE Ohio that developed and uses a unique method of manufacturing. Our Technical Sales Team has over 275 years of combined experience in the metalcasting industry. Novis Works is strategically linked with MT Systems, an industry leader in process control & system automation. This unique blend of experience yields superior process support, process control and chemical knowledge. Products include specialty resins, release agents, sand additives, adhesives, amine recycling and engineering services. Please visit us at Booth 625.

O

OmniSource Corp. **325**
7575 W. Jefferson Blvd.
Fort Wayne, IN 46804-4131
omnisource.com
(260) 422-5541

Omni is a trusted, dependable source of ferrous and non-ferrous recycled metals; producing an array of high-quality products for foundry and mill applications including busheling, cast, P&S, shred, slitter, copper, aluminum, brass, & stainless alloys. Our focus on customer needs and in-depth knowledge of melting operations makes Omni the obvious choice for foundry scrap products. Advanced processing and material management systems ensure consistency and reliability across all product categories allowing for specific requirements for size, chemistry, density, and packaging.

Online Resources Inc.* **228**
125 N. West St.
Lebanon, IN 46052
onlineresourcesinc.com
(765) 482-9700

Online Resources, Inc., is a recognized leader in 3D scanning technology solutions. We provide solutions that fit the needs of our customers with the power of Industry 4.0 Automated In-Line inspections for manufacturers to in-house reverse engineering services for those specialized projects and everything in between.

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Otto Junker USA* **229**
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Canton, OH 44706
junkerinc.com
(630) 231-3770

P

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Grandiville, MI 49418
padnos.com
(616) 551-5900

PADNOS provides uniform, specification-grade materials that deliver quality, reliability and value. You can expect more from PADNOS because we expect more from ourselves. Thanks to our industry-leading material sorting and segregation process, we provide customers with consistent quality to meet their specifications across our full range of products. When you need reliable metals, plastics, paper and electronics that provide a quality alternative to prime raw materials for manufacturing, call us.

Palmer Mfg. & Supply Inc.* **246**
18 N. Bechtle Ave.
PO Box 2579
Springfield, OH 45501
palmermfg.com
(937) 323-6339

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Pangborn Corp.* **830**
4630 Coates Dr.
Fairburn, GA 30213-2975
pangborn.com
(301) 739-3500

Pangborn provides superior shot blasting equipment and surface preparation solutions. Our sales, engineering, and service teams design best-in-class solutions, parts, and service that help our customers drive operational excellence, realize improved total cost of ownership, and increased profitability.

Perennial Group **453**
800 Westchester Ave. Ste. S-308
Rye Brook, NY 10573
theperennial-group.com
(914) 670-5771

Perennial brings aluminum consumers the most consistent, high quality, environmentally focused primary aluminum, including Primary Foundry small form ingot and T-bars with the best customer service and market analysis. We develop long-term partners, not customers.

Our goal is to be the largest and the most reliable American owned and operated supplier of value-added aluminum products to the Americas while providing better than the best customer service before and after the sale with an immense focus on impacting the World with responsibly sourced aluminum.

Pillar Induction* **203**
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Brookfield, WI 53045
pillar.com
(262) 317-5300

ProFound Alloys LLC **215**
1400 Ashwood Dr. Ste. 1401
Canonsburg, PA 15317
profoundalloys.com
(412) 833-9733

Provider of ferroalloys, scrap, and other raw materials.

ProService SRL **852**
Via Marco Polo 3
Borgoricco (Pd) Italy, 35010
Italy
39 049 5797189

With more than 20 years of experience in the Foundry Industry, in close contact with our customers, ProserviceTech offers a modular and functional ecosystem of products that span from thermal analysis and control software, alloy dispensers, cored wire stations, metal transportation systems, vision and optical devices, consumables, to new solutions to improve cores and molds handling and assembly, including drilling and gluing, coating preparation, filtration, application, and drying.

Expertise, Technology and Innovation are our main pillars.

PushCorp Inc. **408**
PO Box 181915
Dallas, TX 75218
pushcorp.com
(972) 840-0208

PushCorp is a robotic tooling manufacturer, specializing in material removal equipment. Whether you're a manufacturer or a robotic systems integrator, we have the tooling to help automate your manual process. As creator of the original force compliance device, we have helped automate thousands of robotic processes across the globe. Innovation is in our DNA, and it's why we continue to create, evolve, and add new surface finishing products to our portfolio.

Pyrotek Inc. **847**
705 W. 1st Ave.
Spokane, WA 99201-3909
pyrotek.com
(866) 797-6835

For decades Pyrotek's innovative technology has improved casting quality in foundry processes worldwide, delivering solutions from the ingot to the final cast part. Don't miss this opportunity to learn how a wide range of Pyrotek capital equipment and consumable parts can improve metalcasting operations. Ask about customized engineered solutions to meet the biggest challenges.

Q

Q&F Engineering **752**
18245 N. Pima Rd. Unit 3045
Scottsdale, AZ 85255
(630) 803-9277

At Q&F Engineering, we are committed to bring to the US foundry market, cutting-edge solutions. Our approach begins with a thorough analysis of your product portfolio, aiming to identify opportunities for process enhancement, cost reduction, and improved operational efficiency. Our equipment solutions are not mere products; they are the result of meticulous study and best practices tailored to your unique operation. Companies: Kunkel-Wagner Germany GmbH – Molding lines Automatic Foundry Solutions -Core shooter Rotavi – Alloys Dalca – Automation

Quad City Safety Inc.* **336**
5311 Tremont Ave.
Davenport, IA 52807
quadcitysafety.com
(641) 226-7823

Quad City Safety, Gentex/PureFlo, and American Safety Clothing are your total PPE solution to metalcasting workplace safety. Servicing the PPE industry with more than 100 years' combined experience, we can meet your needs. Quad City Safety has the know-how to help identify and solve hard to fix safety situations. AMC produces the proper protective clothing needed in foundries while Gentex/PureFlo offers its unique belt free/hose free PAPR. Their powered air purifying respirators assure workers head, face, and lungs always remain protected. Talk to the experts at booth 336.

R

Red Sky Lighting LLC* **741**
9370 Pittsburgh Ave.
Rancho Cucamonga, CA 9173
redskylighting.com
(262) 456-5002

Red Sky Lighting, a California-based manufacturer, specializes in industrial LED lighting for harsh environments like metal processing, oil and gas, marine transportation, and more. Assembled in the USA, our products are known for reliability and quality. We offer fast delivery and excellent customer support, earning trust globally in North America, Latin America, the Middle East, Europe, and Southeast Asia. Our commitment: Making Seriously Safe Lights with an unwavering standard of excellence.

REFCOTEC Inc.* **603**
542 Collins Blvd.
Orrville, OH 44667-9796
refcotec.com
(330) 683-2200

REFCOTEC, Inc. based in Orrville, OH has grown to one of the industry's premier manufacturers of foundry consumables. The company started in 1989 producing custom-made refractory coatings. The products were manufactured to the exact specifications of the foundry requirements. REFCOTEC has grown drastically using a customer-first approach. This has led to expansion through partnerships and acquisitions in the foundry industry. REFCOTEC has grown to include all foundry resin systems, sand additives, and riser sleeves.

Refractory & Insulation Supply Inc.* **815**
101 E. Trails Rd.
Eldridge, IA 52748-9308
refins.com
(563) 285-9229

Reichmann & Sohn GmbH/MAUS **244**
Rudolf-Diesel-Str. 6-8
Weissenhorn 89264
Germany
reichmann.com
+49 172 7053522

Reichmann & Sohn GmbH has more than 100 years of experience and engineering competence in grinding and cutting technology. Customers around the world trust in the high level of innovation, reliability, and quality of the machines "Made in Germany". The Reichmann Casting Finishing division offers customer-oriented solutions for automatic cutting, deburring, surface grinding and belt grinding of cast parts. The systems for automatic casting finishing and post-processing enable positive effects on costs, productivity, quality, health, and safety in foundries worldwide.

Rima Industrial S/A **757**
1701 Providence Park Ste. 100
Birmingham, AL 35242
polymetalloys.com
(205) 981-2200

The RIMA group is a leader in the production and sale of magnesium and silicon-based alloys in Brazil. RIMA is the only primary magnesium producer in the southern hemisphere. RIMA's products are manufactured from its own dolomite and high purity quartz reserves under processes certified by SA8000, ISO45001, ISO 14001, IATF 16949 and ISO 9001, in addition to being certified by FSC®-C121993. Our goal is to continuously improve and surpass the standards of excellence in meeting our customer's needs following strict quality controls.

Rotavi Industrial **842**
Rua Salvador Roberto 1963
Várzea da Palma, Minas Gerais 39260-000
Brazil
rotavi.com.br/?lang=en
+55 11 5631-0200

We are a 100% Brazilian company producing since 1972 the best quality ferroalloys destined to the production of iron (Ductile and Gray iron) and steel castings; ROTAVI is located in the northern region of the state of Minas Gerais in an area of more than 350 thousand m2. ; Current production capacity of 18.000/mt year; Our raw material Zirconium is extracted from our own mine and charcoal partially provided from our own Eucalyptus farmers. Our products are MgFeSi, Inoculants, FeSi 75% and FeSi Zirconium.

S

Saint-Gobain Ceramics & Plastics* **208**
1 New Bond St.
Worcester, MA 01606-2614
refractories.saint-gobain.com
(508) 335-4881

Savelli Technologies S.r.l.* **423**
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Rodengo Saiano Brescia 25050
Italy
savelli.it
+3903022795

Savelli Technologies S.r.l., registered trademark "SAVELLI since 1842", is an Italian company located in Brescia, northern Italy, and a historical Italian supplier of equipment, machines and plants for the "Green Sand" metal-casting industry; it designs and produces automatic tight flask molding lines and sand preparation & return systems; its mission is to facilitate the Foundry process characterized by high complexity, supplying the best machineries and plants 4.0 in the name of technological innovation and environmental sustainability and it designs and customized them around the castings.

Saveway USA Corp. **421**
4305 Mt. Pleasant St. NW Ste. 101
North Canton, OH 44720-5461
savewayusa.com
(610) 376-5440

Saveway is the #1 worldwide leader in Refractory Monitoring Solutions. Among its many benefits, Saveway most importantly provides utmost safety for operating staff and molten-process equipment. Furnace breakthroughs, plant damage and operating disruptions can be avoided. Since relining becomes predictable, maximum service life of the refractory is ensured without any risk.

The Schaefer Group* **845**
1300 Grange Hall Rd.
Dayton, OH 45430
theschaefergroup.com
(937) 253-3342

Frank W. Schaefer, Inc (FWS) started business as a refractory contractor in 1930 and began designing and manufacturing industrial furnaces in 1945. In the early 1970's, FWS's aluminum furnace business grew large enough that it became necessary to form two divisions within the company: A Refractory Sales and Service Division and an Industrial Furnace Division. In 1998, the Industrial Furnace Division was separated from FWS, Inc to form a new company, Schaefer Furnaces, Inc (SFI). A combining of these two related companies took place in late 2002, Adding Stack Melting in 2018.

Schust* **252**
4483 County Rd. 19 Ste. A
Auburn, IN 46706
schust.com
(800) 408-4820

Schust provides industrial ventilation systems that purify the air in the workplace. Schust has a flexible approach to project management and understands the challenges that modern industrial environments face. Our in-house specialists and engineering team are dedicated to estimating, designing, fabricating, and installing air pollution control systems that meet the needs of our customers and are both effective and safe.

Scientific Dust Collectors* **740**
4101 W. 126th St.
Alsip, IL 60803-1901
scientificdustcollectors.com/about-us/
(708) 597-7550

For over 40 Years we have continued to manufacture the most efficient Baghouse Dust Collector on the market today. And with your support, we'll continue for another 40 years. If you have any questions about how we can improve your current dust collection system, or if you are in need of a new Dust Collection System, please keep us mind. SDC will show you how our systems provide an industry leading lower Carbon Footprint, and explain why our Patented UniFlow Supersonic Nozzle™ can save you energy and maintenance costs.

"Quality means doing it right when no one is looking." Henry Ford

SELEE Corporation* **825**
700 Shepherd St.
Hendersonville, NC 28792-6472
selee.com
(828) 697-2411

SELEE pioneered the use of ceramic foam technology in metal filtration 50 years ago. As a result of this commitment to innovation, SELEE remains consistently at the forefront of the latest developments in filtration, melt treatment and transfer processes for molten metals of all types. We are very proud of our long-term commitment to customer service, product quality, leading edge innovation, and technical support for our customers. As pioneers in metal filtration, SELEE continues its legacy of helping customers improve the quality of their products and the efficiency of their operations.

Shells Incorporated **231**
502 Old U.S. Hwy. 30 E.
Bourbon, IN 46504
shelsinc.com
(574) 342-2673

Shells is a leading producer of outsourced cores for the foundry industry. We offer a full-range of core-making services including cold box and shell cores. Shells 3D offers the foundry industry with 3D printed sand cores and molds that are sophisticated and elaborate, in less time. We use a binder jetting technology to produce resilient, no-assembly 3D printed sand cores and molds for the highest quality castings.

Simpson Technologies Corp.* **334**
751 Shoreline Dr.
Aurora, IL 60504-6194
simpsongroup.com
(630) 978-0044

Simpson is a global leader in industrial mixing and foundry sand technology. Our machines improve quality, lower variability and reduce cost. Our technologies include everything you need to create the highest-quality, precision-blended products.

From world-leading intensive mixing technology to specialist solutions for the preparation, reclamation and testing of foundry sand. Robust, durable, and easy to maintain, our technology goes the distance – with virtually no manual intervention. Equipment that is energy-efficient and cost-effective.

Sintex Minerals & Services Inc.* **335**
29810 Southwest Fwy.
Rosenberg, TX 77471
sintexminerals.com
(281) 239-2799

CASTBALL ceramic sand has been designed to produce casting with high quality granting less expansion-defects as veining, metal penetration and burn-on, also providing high dimensional accuracy.

Sintex Minerals and Services Inc.
281-239-2799
sales@sintexminerals.com
Booth 335

Sinto America* **329**
150 Orchard St.
Grand Ledge, MI 48837
sintoamerica.com
(517) 371-2460

Sinto America, Inc. and its operating companies are dedicated to providing superior customer service by offering practical, cost effective and technologically advanced equipment and service solutions to a variety of industries throughout North America.

Sinto America focuses on six primary markets – Foundry Mold and Core Making, Sand Processing, Bulk Material Handling, Automation, Surface Treatment, and Surface Technologies.

SIR Robotics Inc.* **321**
15 Business Park Way Ste. 119
Sacramento, CA 95828
sir-mo.it
(817) 403-1363

SIR Robotics is a Global Robotic System Integrator with more than 3,000 applications installed worldwide, providing robotic solutions to the foundry industry since 1984.

From simple tending and handling units up to grinding / cutting /degating systems, SIR's unique aim is to identify the idea, the solution and the technology needed to ROBOTIZE your technological process.

Smart Sand* **225**
28420 Hardy Toll Rd. Ste. 130
Spring, TX 77373
smartsand.com
(281) 231-2660

Smart Sand's is a publicly traded mining company, committed to supporting the foundry industry by providing high purity, round/sub-round, silica sand from our mining locations in Ottawa- IL, Oakdale- WI and Blair- WI. Product is available from 20-110 GFN via truck, rail or package. Our Ottawa facility offers best in class truck loadout facilities, coupled with sand cooling and custom blending capabilities. Our extensive rail infrastructure provides access to all Class 1 railroads, allowing Smart Sand to supply product throughout the United States, Canada and Mexico. Smart Sand - Smart Choice

Sociedad Mexicana de Fundidores (FundiExpo) **855**
Boulevard Universitario 399 Int. 21
Queretaro, 76230
Mexico
smfac.org.mx
+52 5559129967

Southeastern Foundry Products & Foundry Coatings Inc.* **609**
42 Longview Cir.
Alabaster, AL 35007
sefp.net
(205) 620-0146

Southeastern Foundry Products & Foundry Coatings, Inc. is one of the leading coating manufacturing companies for water and solvent based coating, release agents, boron nitride releases, and a distributor for foundry product lines. Our plant occupies 50,000 square feet with a maximum production capacity of 60 million pounds annually plus several warehouses for inventory. We are the producer of the following: Lost Foam Coatings, Sand Coatings, Investment Casting Coatings, Permanent Mold Coatings, Ladle Coatings, Die Cast Coatings, Mold/Core Paste, Mudding Compounds, 3D Coatings.

Spectro Alloys Inc. **843**
13220 Doyle Path E.
Rosemount, MN 55068-2510
spectroalloys.com
(612) 801-0122

We offer a full range of AA specification die cast and foundry alloys, as well as lower cost alternatives like NASAAC and RSI. We service customers regionally and internationally, from one stack at a time to dozens of loads per week. We are a reliable home for your scrap as well. We also sell the Bulldog banding chopper helps reduce dumpster expense, improve employee safety, and keeps workplaces clean. Reach your company's zero-waste and recycling goals by generating revenue from your scrap material processing.

STRATECASTS **233/244**
38799 W. 12 Mile Rd.
Farmington Hills, MI 48331
stratecasts.com
(833) 381-9300

Summit Foundry Systems Inc. **819**
2100 Wayne Haven St.
Fort Wayne, IN 46803-3279
summitfoundrysystems.com
(260) 749-7740

Summit provides Sand Systems, Automatic Mold Handling Indexing Systems, Casting Handling Systems, and Turnkey Foundry Design Projects from Concept through Installation. Exhibit will highlight various projects for the Foundry Industry. Video Clips will illustrate the latest concepts in operation of Automatic Mold Handling Indexing Systems to integrate with the various Match Plate Automatic Molding Machines. COOLtech Sand Cooling Water Addition System will be featured. Summit provides individual components such as Conveyors, Bucket Elevators, Rotary Screens, Sand Feeder Bins, and Storage Bins.

Sun Metalon* **753**
One Broadway
Cambridge, MA 02142
sunmetalon.com
(617) 682-3624

SUN METALON provides cost-effective technology to decarbonize metal manufacturing through recycling, refining, and forming. We collaborate with automakers and heavy industrial partners, die casters, and production sand foundries, amongst others, enabling reductions in both CO2 emissions and costs through our modular system.

Scrap generated during metal processing is recycled on-site and transformed, safely and efficiently, into reusable resources.

Supreme Cores* **557**
2595 Highway 87
Alabaster, AL 35007
supremecores.com
(205) 664-4127

Supreme Cores supplies high quality cores to the foundry industry from locations in Alabama, South Carolina, and Wisconsin.

Suzhou Weijing Automation Co. Ltd. **731**
No 156 Xinzhuang Town
Changshu, Suzhou City Jiangsu 215500
China
weijingsz.com

Suzhou Weijing Automation Co., Ltd, established in 2008.

By Dec, 2023, Weijing has delived 983 wedges, 46 runner breakers, 198 degating hammers, 121 auto grinders, 57 pouring machines.

Weijing unique vertical wedges can degate castings vertically and quickly no matter on the shaking conveyor at waist height or at ground level directly.

Weijing air hammer is No. 1 in China.

Weijing has 2 axis and 5 axis CNC grinders with hand teaching mode and complete CNC programming system.

Weijing pouring machine can suit no matter horizontal lines and vertical lines, or aluminum casting.

Synchro ERP Ltd.* **708**
BM Synchro ERP Ltd.
London, London, City of WC1N 3XX
United Kingdom
synchroerp.com
(800) 323-2808

SYNCHRO ERP LTD - Experts since 1975 meaning we have almost 50 years' experience in providing the cast metal industry with a tailor-made global leading, and affordable software. Synchro, provide, innovation, growth, and prosperity. Cut your business costs, spend less time managing systems and more time focused on profit and growth! Software fit for purpose. Synchro's exceptional support, with a back-office team (who have combined foundry experience of over 200 years) that prides itself on resolving issues quickly and efficiently with minimal impact on a customer's day to day operations.

SYSCON Sensors* **728**
1108 High St.
South Bend, IN 46601-3705
syscon-intl.com
(574) 232-3900

For more than four decades beginning in 1975, SYSCON International, Inc. designed and manufactured molten metal temperature measuring and thermal analysis systems for Hereaus Electro-Nite. Now, with a new organization devoted to direct sales, we are putting our experience to use through an updated line of instruments and sensors to serve foundries and steel mills that have not previously had access to this kind of equipment at competitive pricing. We're proud to be a premier provider of temperature measurement and analysis equipment for these facilities.

T

TEMC Metal & Chemical Corp.* **828**
2F-3 No. 6 Alley 25 Lane 113 Sec. 3 Minsheng E. Rd.
Taipei City, Taipei 105
Taiwan
temc.com.tw

Professional manufacturer of sand molding materials for casting, such as riser sleeves, furan resin, refractory coatings, paper tube runner, mold seal etc.

Thermo Fisher Scientific **314**
5225 Verona Rd.
Fitchburg, WI 53711-4497
thermofisher.com
(800) 532-4752

Thermo Fisher Scientific, the world leader in serving science, offers a large variety of analytical instruments, in particular for optical emission spectrometry (OES), ideal for use in process/quality control for elemental analysis of solid metals, and XRF/XRD, for analysis of all types of materials. Thermo Fisher reinforces its long-term commitment to innovation by presenting best-in-class instruments and solutions. Visit our booth to learn more about our solutions for metals analysis or go to www.thermofisher.com/elemental.

Thermotec LLC* **720**
2421 E. 28th St.
Lorain, OH 44055-2113
thermotecindustries.com
(440) 277-1246

Thermotec's primary goal is to produce world-class consumable products for the foundry and steel industry using the highest quality raw materials. Our stringent ISO-Certified quality control program has allowed us to establish partnerships with some of the largest foundries and steel plants in the world. Thermotec manufactures products with rigorous dimensional and raw material controls, assuring our customers a consistent, value-added, cost-effective product.

ThermTech of Waukesha **218**
301 Travis Ln.
Waukesha, WI 53189
thermtech.net
(800) 752-6917

ThermTech is a privately held commercial heat-treating company that offers a wide range of services to a diverse and discerning set of customers.

We are proud to offer exceptional, value-added services to manufacturers in the Forging, Foundry, Heavy Equipment, Machining, Oil & Gas and Tool & Die markets. Now offering Press Quenching!

Located in Waukesha, WI, ThermTech is currently ISO 9001 and AS9100 certified.

Tinker Omega Sinto* **328**
2424 Columbus Ave.
PO Box 328
Springfield, OH 45503
tinkeromega.com
(937) 322-2272

Tinker Omega Sinto LLC is part of the largest foundry equipment company in the world. We specialize in Equipment and Systems for No-Bake Sand Foundries. Our product lines include Sand Mixers, Sand Temperature Contol, Mold Making, Core Making, Pouring & Cooling and all aspects of Sand Reclamation. We also have recently introduced our RSM Robot Sand Milling System that allows a foundry to make a mold directly from a 3D model.

Tradesmen International* **312**
9760 Shepard Rd.
Macedonia, OH 44056
tradesmeninternational.com
(440) 276-0826

Tradesmen International's Industrial and Manufacturing vertical offers unparalleled workforce solutions, leveraging decades of industry expertise to provide specialized and highly skilled craftsmen, technicians, and professionals. With a safety-first approach and a commitment to flexibility and scalability, we ensure a secure work environment while meeting the dynamic staffing needs of industrial and manufacturing operations. Our nationwide presence, industry-leading talent pool, and focus on efficiency make Tradesmen International the trusted partner for elevating workforce strategies.

Transmet Corp. **812**
4290 Perimeter Dr.
Columbus, OH 43228-1036
transmet.com
(614) 276-5522

Transvalor Americas Corp.* **420**
405 W. Superior St. Unit 601
Chicago, IL 60654
transvalorusa.com
(312) 219-6029

TRANSVALOR AMERICAS CORP was founded in 2011 to serve American markets and customers. Our Technical Support team operates from our centrally-located Chicago office. Transvalor has developed an extensive suite of high-performance virtual engineering software that addresses a wide range and variety of industrial processes, for metallic solid and liquid materials as well as for polymers. Our simulation software solutions provide manufacturing and engineering intelligence to a wide range of industries including Automotive, Aerospace, Energy, Medical, Academic.

Trebi North America Inc.* **241**
1208 W. White River Blvd.
Muncie, IN 47303
trebi-na.com
(765) 730-1731

Manufacturer of robotic cells for cutting and deburring.
We are not a robot integrator, we develop our own working units (grinders, paper-sanding, file tools, band saw, etc.) to achieve the best performance by robot.

U

U-Metco Inc. **512**
8651 E. 7 Mile Rd.
Detroit, MI 48234
u-metco.com
(313) 550-3328

U-Metco Inc. is a supplier of high-quality steel and stainless Melting Stock and Cover Steel Punchings for ferrous foundries throughout North America. They offer a wide range of consistent, guaranteed chemistry steel and stainless-steel alloys in the form of punchings, plate, and bar. Materials are processed to be clean and dry, and packaged for maximum efficiency in handling in charging. Chemical certificates of analysis are also provided with each shipment.

Unimetal USA Inc.* **234**
209 Orange St.
New Castle County, DE 19801
(713) 517-9129

Creating carbon solutions to add value to several industrial segments. A brand with a global reach that ensures high technology and quality in carbonaceous products.

USMFG Inc.* **551**
1500 Kalamazoo St.
South Haven, MI 49090
us-mfg.com
(269) 637-6392

USMFG Inc. was formed to provide the highest quality briquettes materials to the foundry and steel industry in the US. It is a subsidiary of MFG mbH, Germany, which has decades of experience in this field. We are a US based supplier of metals and alloys including silicon-based materials, ferromanganese, silicon carbide and briquetted materials to the foundry and steel industry. Our sales and service personnel work closely with our customers to provide briquetted materials specific to their unique operation.

V

VCxray by Visiconsult **721**
Brandenbrooker Weg 2-4
Stockelsdorf, Schleswig-Holstein 23617
Germany
visiconsult.de
0049 (451) 290 286-0

VisiConsult is a family-owned company located in Northern Germany and known as the leading supplier for customized and standard X-ray inspection systems. To ensure a premium quality, all products are developed and produced locally as turnkey solutions. This leads to cutting edge technology and an unmatched flexibility. Our goal is to solve inspection problems with tailored systems, while guaranteeing a premium post-sales service. More than 25 years of expertise in industrial (NDT) and security applications combined with experienced engineers result in solutions that set new industry standards.

Versatile Equipments Pvt. Ltd. **841**
B69 MIDC gokul Shirgaon
Kolhapur, Maharashtra 416234
India
versatile.group
00919371669640

Versatile has been providing innovative solutions to the foundry industry for testing and control of foundry sand since 1967. With over 9000 customers globally, including the world's best foundries and raw material suppliers, as well as top research laboratories, our equipment is used in every aspect of the production process. We are constantly investing in research and development to stay ahead of the technological demands of the sector. Our commitment to quality and customer satisfaction has enabled us to remain a leader in the field of testing and control technologies for foundry sands.

Versevo Inc.* **629**
1055 Cottonwood Ave.
Hartland, WI 53029-8309
versevo.com
(262) 369-8210

VERSEVO is a provider to the cast metals industry, with a focus on product diversity, and mission to become the premier supplier to the metal casting and cast products industries. Offerings include process development engineering, part design, tool design, prototype & production tooling, low pressure aluminum castings, production machining, and foam molding, for High Pressure & Low-Pressure Casting, Trimming, Lost Foam Casting, Permanent & Semi-Permanent Mold Casting, and Vertical & Horizontally parted Sand Casting.

VIBROTECH Engineering* **236**
Txirrita Maleo 7Z
Renteria, Guipuzcoa 20100
Spain
vibrotech-eng.com/en/company/
(+34) 943 01 08 11

VIBROTECH Engineering is a European manufacturer of vibratory equipement for ferrous and nonferrous foundries with more than 20 years of experience...

We supply:
- Furnace chargers
- Mold dump Conveyors
- Shake out conveyors
- Shake out tables
- Resonance conveyors for sorting, cooling, De-gating, sand spillage
- Fluidised bed sand coolers
- Shotbalsting machine chargers
- Two-ways conveyors

Sturdy and reliable designs ensure a high quality and durability machinery that will enhance your foundry productivity and reduce your maintenace costs.

Viking Technologies* **703**
25169 Dequindre Rd.
Madison Heights, MI 48071-4240
viking-technologies.com
(248) 548-3038
The World Famous RunnerBreaker Technology. Crush your sprue and scrap and up to 15% electricity and faster furnace loading. More tons per shift.

Viking Wheel Blast Systems* **718**
731 S Industrial Ct.
Rose Hill, KS 67133
vikingcorporation.com
(316) 634-6699

Viking Wheel Blast Systems is a premier manufacturer of shot blast machines and systems for various industries and applications. The company provides custom-engineered solutions that deliver high performance, efficiency, and durability. Viking Wheel Blast Systems produces different types of shot blast machines, such as chain belt, roller table, monorail, skew roll, spinner hanger, tumble blast, and table blast machines. Viking also offers quality parts and service to support its customers' needs. Based in Rose Hill, Kansas, the company operates in more than 25 countries.

VJ Technologies Inc.* **324**
89 Carlough Rd.
Bohemia, NY 11716-2903
vjt.com
(631) 589-8800

VJ Technologies Inc. (VJT) is a global leader in providing Digital Radiography and Computed Tomography x-ray inspection systems and solutions for a variety of industries. For over 35 years, VJT's engineers have developed groundbreaking solutions. Through VJT's experience it has led to innovative decisions and more advanced capabilities than competitors in our standardized systems. Our imaging systems are used throughout the world for radioscopic inspection of products and assemblies to detect defects or foreign matter, reducing cost and time while increasing quality and safety.

Voxeljet America Inc.* **411**
41430 Haggerty Cir. S.
Canton, MI 48188-2227
voxeljet.com
(734) 808-0025

W

Weiler Abrasives **719**
1 Weiler Dr.
Cresco, PA 18326-980
weilerabrasives.com
(800) 835-9999

As an industry leader and global manufacturer of surface conditioning solutions, Weiler Abrasives is dedicated to forging collaborative relationships with our customers in diverse markets - Metal Fabrication; Industrial Production; and Maintenance, Repair and Operations - to tackle their toughest cleaning, grinding, cutting, deburring and finishing challenges. Our new foundry abrasives deliver maximum performance in the cleaning room. We offer the right product solutions and expertise to help you find production and process efficiencies and eliminate the bottleneck in your operations.

Wheelabrator Group* **334**
1606 Executive Dr.
LaGrange, GA 30240
wheelabratorgroup.com
(706) 884-6884

Wheelabrator is a world leading shot blasting equipment manufacturer offering a complete range of machines, parts and services. Wheelabrator has the largest installed base in the industry to deliver Wheelabrator Group's equipment and services to our customers to improve their productivity and profitability.

Whiting Equipment Canada Inc. **520**
PO Box 217
350 Alexander St.
Welland, ON L3B 5P4
Canada
whiting.ca
(905) 732-7585

Whiting Equipment Canada is a wholly owned subsidiary of Whiting Corp., Monee, Ill. The company and its subsidiary manufacture meltshop and material handling equipment, including electric arc furnaces, ladles, transfer cars, charge buckets, EAF control upgrades, tilting stands, AOD systems and furnace transformers. The Whiting booth will be staffed with technical specialists ready to discuss the technical aspects of your future projects, along with Whiting's engineering and manufacturing capabilities.

WINOA USA **309**
18900 Rialto St.
Melvindale, MI 48122
winoa.com
(313) 841-5400

Y

Youngstown State University **854**
360 W. Commerce St.
Youngstown, OH 44503
ysu.edu/excellence-training-center
(330) 941-2358

The Excellence Training Center at Youngstown State University is a one-of-a-kind workforce, education, research, and commercial center focused on advanced manufacturing. Career pathways for all types of students include traditional and non-traditional certifications and industry recognized credentials offered in a wide range of areas such as manual and CNC machining, industrial maintenance, robotics, automation, and additive manufacturing. The ETC houses over $10 million of advanced manufacturing equipment that is used to bring the programs to life.

Z

ZEISS Industrial Quality Solutions* **654**
6250 Sycamore Ln N.
Industrial Measuring Tech Div.
Maple Grove, MN 55369-6310
zeiss.com/metrology
(763) 744-2400

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Aalberts Surface Technologies* **442**
12202 Newburgh Rd.
Livonia, MI 48150
aalberts-ht.us
(734) 464-8000

Metal treatment solutions for your most challenging products.

AERO Metals Inc.* **345**
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La Porte, IN 46350-3955
aerometals.com
(219) 326-1976

Aero Metals is your trusted source for premium precision investment casting services. With decades of experience, we support a range of industries including aerospace, farm & lawn equipment, door & lock security hardware, firearms, hand tools, marine, and more! To ensure the highest quality manufacturing of your parts, our system is certified to the globally recognized ISO 9001:2015 standards. Our team of precision investment casting engineers has extensive experience with complex geometries and hard-to-manufacture parts, offering a truly unique experience custom-fitted to your project.

Alliant Castings* **651**
1200 W. 3rd St.
Winona, MN 55987
alliantcastings.com
(507) 452-2932

Alliant Castings manufactures alloyed iron castings. Applying the latest technologies, we produce castings to meet our clients’ most demanding specifications. With over 125 years’ experience in alloyed iron parts, we take pride in delivering intelligent solutions at a competitive price, with shorter lead times and exceptional customer service.

Atlas Foundry Co. Inc.* **343**
601 N Henderson Ave.
Marion, IN 46952-3348
atlasfdry.com
(765) 662-2525

Atlas Foundry is a jobbing and production foundry specializing in Class 25, 30, and 35 Gray Iron Castings weighing less than 50 pounds. We utilize Disamatic Molding Machines to produce molds for our castings. Production volumes range from 100 mold releases to several thousand molds per release. Our foundry is located in Marion, Indiana about 60 miles to the northeast of Indianapolis. Some of the major markets Atlas Foundry serves include trucking, agriculture, construction, pumps, Hydraulic parts, compressors, bearings, stadium seating, marine, and industrial equipment. Since 1893.

B

Badger Alloys Inc.* **643**
5120 W. State St.
Milwaukee, WI 53208-2616
badgeralloys.com
(414) 258-8200

“World-class castings delivered” has been our commitment to customers for more than 55 years. Badger Alloys is a family-owned casting manufacturer that pours 200+ alloys on site. Our manufacturing campus includes a pattern facility, machine shop, rapid-response technologies and experienced engineers. We can meet your needs for simple to heavily cored, complex castings, from 10 to 4,000+ pounds. We specialize in creating impellers and other pump parts for the energy, water, chemical, industrial, food/beverage, marine and defense industries. Visit us today at Booth 643!

C

Charlotte Pipe & Foundry Co.* **644**
PO Box 35430
Charlotte, NC 28235-5430
charlottecastings.com
(704) 348-5416

Charlotte Pipe is a family owned and privately held company that has been in the foundry business for over 120 years. We currently serve the motor, material handling, fueling systems, packaging, heating and valve/pump markets.

Our new foundry is a large (500,000 sq ft) and modern foundry that has diverse equipment to meet your specific needs. We are a medium to high production green sand foundry, with Disamatics, Sinto matchplate and HWS automated cope and drag molding equipment.

We have in house e-coat, machining and pattern shop. We are a debt free and stable company.

D

Denison Industries Inc.* **545**
22 Fielder St.
Dension, TX 75020
denisonindustries.com
(903) 786-6500

Denison Industries is your one-stop shop for premium, aluminum castings! We employ a complete engineering staff that can assist component and casting engineers from design to fit and function to accommodate the end user casting requirements. Denison Industries is located in Denison, Texas in the North Texas Regional Airport. Our facilities total;229,925 sq feet with;10,000 sq feet of office area;100,000 sq feet of warehouse space and a 119,925 sq-foot foundry; We can produce parts sized from 1 lb to 3,000 lbs. Aluminum alloys 206, 319, 354, C355, 356, A356, and E357.

Dotson Iron Castings* **540**
200 W. Rock St.
Mankato, MN 56001-3473
dotson.com
(507) 345-5018

Dotson Iron Castings, an MPS Company is a leading manufacturer of ductile iron castings to various markets, including agriculture, construction, heavy truck, railroad, oil & gas, and industrial. Our capabilities include in-house tooling and machining, painting, heat treatment, and assembly. Dotson supplies the industry shortest lead times, an award-winning engineering, and a dedicated account team. If you are tired of unstable suppliers and inconsistent quality, it's time to come experience the "Dotson Difference".

E

Elyria & Hodge Foundry Group* **440**
120 Filbert St.
Elyria, OH 44035-5355
elyriafoundry.com
(440) 322-4657

Producers of grey and ductile iron castings from 50# to 200,000# in medium to low volumes participating in a wide variety of markets.

F

Ferroloy Inc.* **347**
515 E. 29th St. N
Wichita, KS 67219-4109
ferroloy.com
(477) 876-0897

Full Service Ductile and Gray Iron foundry and machine shop. Specializing in low-medium volume runs.

G

Great Lakes Castings LLC* **446**
800 N. Washington Ave.
Ludington, MI 49431-2724
greatlakescastings.com
(231) 843-2501

Great Lakes Castings has been a producer of high-quality grey iron castings for 778 years now! We produce castings with weights ranging from 1lb to just over 50 lbs. from low volume to high volume. We feature both horizontal matchplate molding and vertical DisaMatic molding. We feature internal heat treat capabilities that affords very consistent machinability with iron. We feature, short, industry leading lead times. We cover a variety of industrial markets and support OEM's direct or Tier 1/Tier 2 supply chains. Please visit our website at www.greatlakescastings.com.

H

Harmony Castings LLC* **444**
251 Perry Hwy.
Harmony, PA 16037
harmonycastings.com
(724) 452-5811

Harmony Castings offers aluminum V-process castings with thin walls, 125 RMS finish, zero-degree draft, and tolerances half the industry standards. Flask sizes range up to 36" by 48" by 12" over 12". Full CNC machining capabilities, coating and finishing services are available. The company serves the robotics, instrumentation, energy, heavy equipment, medical, military, aerospace, and lighting industries. AS9100 and ISO 9001 certified.

HyPro Inc. **344**
600 Jefferson St.
Waterford, WI 53185
hypro.com
(262) 534-5141

HyPro Incorporated, established in 1969, is a leading Tier 1 supplier of automated, robotic, and manual machining of low, mid and high-volume castings, forgings, complex assemblies, casting procurement and technical engineering support for Ag, construction, mining, marine, off-highway, military, engine OEM's and foundries.

I

Impro Industries USA Inc.* **544**
21680 Gateway Center Dr. Ste. 368B
Diamond Bar, CA 91765-5492
improprecision.com
(909) 396-6525

Impro is a global leading manufacturer of high-precision, high-complexity, and mission-critical casting and machined components for diverse end markets. We supply customized casting and machined products and provide surface treatment services to a well-diversified global customer base. Our global leading position is underpinned by our integrated business model with comprehensive capabilities of offering one-stop solutions to our customers.

K

Kimura Foundry America Inc.* **645**
789 W. Boomer Way
Shelbyville, IN 46176
kimurafoundry.com
(317) 604-5158

Specializing in quality castings optimized with 3D printing technology, Kimura incorporates a long history of foundry success and a patented sand material that enables us to produce top-quality, defect-free rapid prototype castings in as little as 5 business days.

We supply rapid prototype castings made of cast iron, cast steel, aluminum and numerous specialty alloys and our process is ideal for rapid prototyping, small volume production, and service parts when a conventional pattern is not available or applicable.

L

The Lawton Standard Co.* **844**
1950 Enterprise Dr.
De Pere, WI 54115
lawtonstandard.com
(920) 337-2470

The Lawton Standard Co. is the parent company of The C.A. Lawton Co. (De Pere, WI and Minster, OH), Temperform, Penn-Mar Castings, Northern Iron & Machine, American Iron & Alloys (Versa-Bar), and AMSCO Wear Products (SWB Global). We provide iron castings up to 45,000 pounds and steel castings up to 5,500 pounds. We also provide continuous cast iron, bronze, and steel bar and custom designed wear-resistant steel products. Our integrated approach includes casting engineering, tooling design, and machining options to provide a comprehensive solution to meet our customers' needs.

LeClaire Manufacturing Co.* **641**
PO Box 1344
Bettendorf, IA 52722-0023
leclairemfg.com
(563) 332-6550

LeClaire Manufacturing is a single-source sand and permanent mold aluminum casting company. We offer a streamlined, vertically integrated process that eliminates the middleman — and the markup — and lets you source your entire project through a single shop, LeClaire Manufacturing. From molds and patterns to leak testers and machining fixtures, we make them all in-house and subsequently produce the sand castings, permanent mold castings, CNC machining, and ship parts to print to our customers.

Ligon Permanent Mold Group* **652**
3312 Lakeshore Dr.
Sheboygan, WI 53081
ligonpermanentmold.com

The Ligon Permanent Mold Group is a family of 4 World Class Aluminum Permanent Mold Casting Foundries with extensive inhouse CNC machining capabilities. We provide machined complete, and powder coated aluminum castings to a wide range of industries. The LPMG offers aluminum gravity casting, tilt pour casting, low pressure as well as our proprietary pumping casting process. We also offer value added operations such as plating and coating, as well as lite sub assembly when required. Our excellent engineering support to include design for manufacturing assistance as well as solidification mode.

M

Monarch Industries Ltd. **647**
51 Burmac Rd.
PO Box 429
Winnipeg, MB R2J 4J3
Canada
monarchindustries.com
(204) 786-7921

N

Neenah Foundry Co.* **644**
PO Box 729
Neenah, WI 54957-0729
nfco.com
(920) 725-7000

With 150 years of experience, Neenah Foundry Industrial Solutions Group, part of Neenah Enterprises, Inc. (NEI), has consistently maintained our industry leadership, delivering value added casting solutions for our customers in the agricultural, construction, HVAC, material handling, and Industrial markets. Now a wholly owned company of Charlotte Pipe and Foundry, NEI is focused on building on our strong foundry know how; how can Neenah Foundry Industrial Solutions Group help you with your casting requirements?

O

Osco Industries Inc.* **541**
734 11th St.
PO Box 1388
Portsmouth, OH 45662
oscoind.com
(740) 354-3183

Founded in 1872, Osco Industries is medium to high volume Gray Iron foundry.

Osco Industries has an industry leading lead time of just 4 weeks and plently of open capacity.

We have three foundries all located in Southern Ohio. Two greensand forundries and one Shell Mold foundry. Our molding equipment includes four D3 Disamatic (19x23) mold lines, one Osborn In-liner (16x22) mold line, two Hunter 10 (14x19) and twenty Shalco (15x20) shell molding machines.

Industries served include: A/C & Refrigeration, Sump Pumps, Industrial Power Transmission, Automotive, Agricultural and heavy truck.

P

Pier Foundry & Pattern Shop* **640**
51 State St.
Saint Paul, MN 55107-1408
pierfoundry.com
(651) 222-4461

Pier Foundry is an ISO certified provider of grey iron, ductile iron and austempered ductile iron castings of superior quality, at a competitive price with one of the shortest lead times in the industry.

We offer over 133 years of manufacturing experience, a knowledgeable and friendly sales staff and a full complement of engineering support and technical services. We encourage our customers to get us involved early in the design process and offer assistance in design and castability from concept through production. Let Pier Foundry be the one stop shop for all of your casting needs.

Product Development & Analysis LLC* **341**
1776 Legacy Cir. Ste. 115
Naperville, IL 60563-1673
pda-llc.com
(630) 505-8801

For over 30 years, providing casting, process and rigging design and development for complex castings in various alloys and casting processes, advance casting process simulation including residual stress, micro-structure and properties predictions,and casting conversion. Over the past decade offering specialized services for the design for additive, AM and Industry 4.0 adoption, AI/ML driven data analytics and meta modeling for problem solving, intelligent manufacturing and efficiency improvements, contract research, scrap reduction and modernization.

Puller Inc.* **751**
3225 Zimmerman Dr.
Bettendorf, IA 52722
(653) 823-6550

R

Rochester Metal Products Corp.* **342**
PO Box 488
Rochester, IN 46975-0488
rochestermetals.com
(574) 223-3164

Rochester Metal Products Corp. has been producing quality gray and ductile iron castings since 1937. Our 200,000-square-foot facility is designed to serve a wide range of casting requirements from .75 pounds to 40 pounds. We offer casting design assistance for new products, from original concept to prototyping and final production. Rochester Metal Products Corp. takes great pride in our decades of commitment to meeting our customers' needs through short cycle times, on-time deliveries, joined by consistent quality and competitive prices.

S

St. Croix Castings Inc. **642**
415 Best Rd.
Woodville, WI 54028
stcroixcastings.com
(715) 698-2410

St. Croix Castings, Inc. is a family-owned aluminum casting foundry that produces small and mid-volume casting orders in both green sand and permanent mold processes.

St. Marys Foundry Ltd.* **340**
405 E. South St.
Saint Marys, OH 45885-2540
stmfoundry.com
(419) 394-3346

Producing gray, ductile and ni-resist quality iron castings ranging from 1000-60,000 lbs. for the oil and gas, pump and valve, and specialty machinery industries.

T

Tooling & Equipment International (TEI)* **447**
12550 Tech Center Dr.
Livonia, MI 48150
teintl.com
(734) 522-1422

As a global leader in the engineering and manufacturing of prototype and low volume production machined aluminum castings for automotive, aerospace and many other industries, Tooling & Equipment International – TEI – delivers the utmost in quality and speed to market. TEI products are of the highest quality and are backed by a reputation for innovation, design excellence, and precise first-time performance.

W

Waupaca Foundry Inc.* **441**
PO Box 249
Waupaca, WI 54981-0249
waupacafoundry.com
(715) 258-6611

Waupaca Foundry produces iron castings the world uses and trusts. Industry-leading quality, delivery, and innovation with an unmatched commitment to sustainability by offering green castings that assist manufacturers in achieving carbon neutrality targets with a reduction of Scope 3 greenhouse gas emissions. Discover the power of true capacity. Everything you need to outperform.

Wisconsin Aluminum Foundry Co. Inc.* **346**
838 S. 16th St.
Manitowoc, WI 54220
wafco.com
(920) 682-8286

Since our beginnings in 1909, we've worked with countless industries to provide them with castings that meet their needs. As a world-class supplier in the non-ferrous casting industry, our work reflects the pride and dedication shared by our team. We exceed expectations with industry leading on-time delivery, lead times, and quality aluminum, bronze, and brass castings across diverse industries.

Celebrating 115 years of hard work and casting excellence!!

Wisconsin Precision Casting Corp.* **350**
300 Interchange N.
Lake Geneva, WI 53147
wisconsinprecision.com
(262) 248-4461

Wisconsin Precision Casting is a leading manufacturer of Investment Castings providing a single solution for both production and prototype requirements. Prototypes delivered in 15-30 days - NO casting tooling required. Patterns printed in house utilizing seven 3D printers. Select from 150 alloys in size ranges to 20"x22"x24" and 100 pounds. Engineering support, secondary machining and finishing operations available. Two ISO 9001:2015 plant locations in Lake Geneva and East Troy WI.

AFS Institute
Foundry E-Learning

The **AFS Institute** offers **more than 100 on-demand Foundry E-Learning modules** ranging in length from 15 minutes to over an hour, viewable on any device or browser. **Foundry E-Learning modules** focus on practical job skills you can use immediately. Each module is based on adult education best practices and strives to engage you throughout. You can purchase Foundry E-Learning modules in two ways:

Foundry E-Learning Subscription Program

Access the full suite of Foundry E-Learning modules for all your employees at one location. The annual subscription fee is based on the number of employees in your facility:

$1,300 up to 100 employees | $2,600 up to 250 employees
$5,200 over 250 employees

Foundry E-Learning Module Individual Access

Foundry E-Learning modules also are available for individual access for 30 days.

Members - $55 per module
Non-members - $110 per module

Contact **Jen Christian**, Director of Training Solutions, at **jchristian@afsinc.org**, to discuss your foundry's training needs or to schedule a free, no-obligation demonstration. To register, visit **www.afsinc.org/elearning** or fill out the form below.

Foundry E-Learning Categories Include:

- 3D Sand Printing
- Aluminum
- Basics of Metalcasting *
- Casting Defect Analysis *
- Cast Iron
- Coldbox
- Copper
- Gating and Riser Design
- Green Sand Molding *
- Lean Manufacturing
- Lost Foam
- Mechanics for Heat Treatment
- Metalcasting Safety
- Permanent Mold
- Nobake Molding & Coremaking
- Sand Testing
- Steel

** Available in Spanish*

Foundry E-Learning Subscription Application

Program Fees

- $1,300 Corporate Members with up to 100 employees (per plant)
- $2,600 Corporate Members with up to 250 employees (per plant)
- $5,200 Corporate Members with more than 250 employees (per plant)

Program Requirements

- Corporate membership must be kept current during 12 month subscription period.
- Training administrator must be designated.
- No refunds or proration of funds once access is established for training administrator.
- A separate subscription and application form is required for each plant.

Optional and tax deductible:

Donate to the AFS Institute and its mission to educate the metalcasting industry. ☐ $20 ☐ $40 ☐ Other Amount $

Form below is only for the **Foundry E-Learning Subscription Program**.
For **Foundry E-Learning Module Individual Access** please visit **www.afsinc.org/e-learning**.

Company Information:

Company _____ AFS Corporate Member Number _____

Address _____ City/State/Zip _____

Designated Training Administrator/Contact Person _____

Phone _____ Email _____

Number of Employees _____

Payment:

☐ American Express ☐ MasterCard ☐ VISA ☐ Check enclosed

Card Number _____ CV# _____ Expiration Date _____

Cardholder's Name _____

Authorized Signature _____ Date _____

Return completed application with payment to:
American Foundry Society | 35169 Eagle Way Chicago, IL 60678-1351
Tel: 847-824-0181/800-537-4237 | Fax: 847-824-7848 | www.afsinc.org

Casting Technology Showcase

S-Max® No 1 Sand 3D Printer on the Market

Flexible, production-ready additive manufacturing S-Max® sand 3D printers are used by foundries worldwide to turn flexible production of any quantity into new business opportunities. S-Max machines are fast, reliable, and precise for the lights-out production of complex molds and consolidated cores. More than half of all ExOne systems installed are at the facilities of repeat customers, including super fleet customer BMW.

Learn more: www.exone.com/BMW

The ExOne Company
978-224-1244
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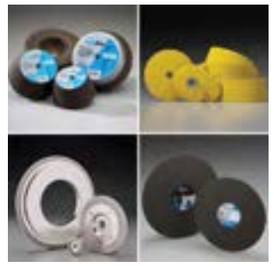
Booth 709

Norton | Saint-Gobain Abrasives



From Norton belts, discs, snagging and cut-off wheels to diamond superabrasive wheels, attendees will see a full line of high-performance products for foundry and metal casting applications. Debuting at the show, New Norton RazorStar™ abrasives with Breakthrough Engineered Shaped Ceramic Grain has unbeatable performance and metal removal rates even in the toughest applications when performing off-hand or automated grinding.

Norton | Saint-Gobain Abrasives
800- 551- 4413
nortonabrasives.com
Booth 410

Sintex Minerals and Services Inc.

CASTBALL ceramic sand has been designed to produce casting with high quality granting less expansion-defects as veining, metal penetration and burn-on, also providing high dimensional accuracy.

Sintex Minerals and Services Inc.
281-239-2799
sales@sintexminerals.com
Booth 335

Laempe Reich

At the core of great foundries. Laempe's CoreCenter is a coreshooter, sand mixer, and gas generator—all under a single controller. Use vertical and horizontal tooling, or a combination of up to 6 parts with no machine changes, or use your existing tooling with a simple conversion. Laempe Reich is unique in that we have a research, complete testing, and core production facility.

Laempe Reich
205-655-2121
LaempeReich.com
Booth 403

Inductotherm Corp.

Inductotherm offers customized solutions for your 21st century challenges. Specializing in advanced induction melting, heating, holding, and pouring systems for metal producers worldwide, their digital solutions and state-of-the-art equipment allow customers to take full advantage of big data and analytics. Since 1953, they've continued to provide customers with the competitive edge, consistent growth, and uninterrupted service.

Inductotherm Corp.
800-257-9527
inductotherm.com
Booth: 305

PEOPLE. TECHNOLOGY. SUCCESS.

We are an international market and technology leader of induction systems for melting, pouring and holding of ferrous and nonferrous metals.

Our success is based on our more than 450 dedicated employees. They provide the perfect combination of proven and innovative technology.

ABP Induction, LLC
732-932-6128
abpinduction.com
Booth 219

Ajax TOCCO Magnethermic

Ajax TOCCO continues to be the trusted leader in induction melting equipment and solutions. Our proven applications include a complete line of coreless and channel furnaces for ferrous and nonferrous melting and holding applications. From simple melt-and-pour systems to sophisticated computer-controlled, energy-efficient melt shops, our line of induction equipment, power supplies, and support provide the most reliable, accurate, and economical solutions for your business.

Ajax TOCCO Magnethermic
800-547-1527
www.ajaxtocco.com
Booth 203

Gradmatic Equipment

Gradmatic Equipment provides an engineered control to meet OSHA's PEL when lining coreless furnaces with silica refractory. Uninterrupted forking produces a denser lining, longer lining life, fewer annual linings and cost savings. Two workers line a furnace regardless of its size. Gradmatic can build a system for furnaces sizes 1 to 85 tons. The system can line a furnace using any particulate material, not just silica.

For more information contact:
Gradmatic Equipment Inc.
705-762-0945
gradmatic.com
Booth 419

S-Max® Flex Robotic Sand 3D Printing

The S-Max Flex makes sand 3D printing more accessible than ever. Recently updated, the S-Max Flex is designed for ease-of-use making it perfect for pattern shops and foundries looking to take the first step into the next era of metalcasting. The S-Max Flex robotic sand binder jetting systems helps get products to market faster and with lower labor requirements.

The ExOne Company
978-224-1244
exone.com
Booth 709

Hoosier Pattern

Known for quality of workmanship and commitment to "On Time Delivery," Hoosier Pattern has gained recognition as a premier pattern shop. With some of the latest tools in technology, including five in-house 3D sand printers and over 25 machining centers, HPI is able to provide you with the best quality, pricing and timing. Our highly experienced staff works hand-in-hand with foundries to ensure that all jobs are done right the first time, every time.

Hoosier Pattern, Inc.
260-724-9430
hoosierpattern.com
Booth 514

Laempe Reich CoreRoom

We sell em. We use em. When we started the CoreRoom, a core supply company, we chose the same machine we want you to buy. LAEMPE. And for the same reasons. Quality cores, at high efficiency, at a reasonable price.

Laempe Reich
205-655-2121
TheCoreRoom.com
Booth 403

Covia Corporation

Foundries depend on Covia's 4+ decades of technical resin coating experience to create formulas that meet their rigorous specifications. Customers can specify and test the sand and the resin to increase productivity of outstanding castings. As the industry's only full-service partner, customers work with Covia foundry experts to solve their complex casting challenges. First-class customer service and advantaged logistics complement this prominent product development.

Covia Corporation
800-243-9004
CoviaCorp.com
Booth 734

Flexovit USA, Inc.

Flexovit is proud to announce the launch of Capstone™! Capstone™ is a brand new, patent pending, grinding wheel designed as an alternative to Type 6 and Type 11 cupwheels. With four full layers of fiberglass reinforcement, a built-in 20 degree grinding angle, a spin on zinc hub, and its unique shape, Capstone™ is a safer and more versatile option than standard cupwheels. Flexovit USA, Inc. is a manufacturer of high productivity abrasive products for the professional. Contact Jeff Franke, Foundry & Applications Manager, at jfranke@flexovitabrasives.com to schedule an evaluation and demo.

Flexovit USA, Inc.
800-689-3539
flexovitabrasives.com
Booth 813

REFCOTEC

REFCOTEC, a second-generation family-owned company has been a proud supplier to the North American metal casting industry for over 30 years. In our Ohio and Texas facilities, we manufacture the highest quality foundry products available on the market including refractory coatings, sand additives, resin systems, pastes, partings, and many more. We specialize in custom product formulation, outstanding technical service, and short lead-times. We have products for every metal alloy and all molding methods. Bring us your casting challenges!

REFCOTEC Inc.
330-683-2200
refcotec.com
Booth 603

LaempearSM

When being there soon is not soon enough

You rely on your LAEMPE CoreCenter. And you're skilled at keeping it running at peak performance. But when you need us, you need us now…and sometimes that can't wait until tomorrow. With one of the largest technical staff of experts in our market, standing-by to support you, you can now have us there virtually in a matter of minutes. Through technology, we can be with you, seeing what you see, supporting you in real-time. We can guide you in a way that has never been seen in our industry, without ever getting on a plane, regardless of where we are.

Laempe Reich
205-655-2121
LaempeAR.com
Booth 403

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Mike Lakas
Senior Vice President of IT, Operations & Trade Shows

Ben Yates
Vice President of Marketing & Business Development

Chris Oswald
Senior Director of Accounting & Finance

Cathy Potts
Senior Director of Human Resources & Administrative Services

2024 Awards

Gold Medal

Henry Lodge

Chairman of the Board, Lodge Manufacturing Co., South Pittsburg, Tennessee

The **Peter L. Simpson Gold Medal** … For his outstanding contributions in promoting public esteem that reflects tremendous positive credit on the metalcasting industry through his leadership within his company and AFS at the local, regional, and national levels.

Jeet Radia

Senior Vice President, McWane Inc., Birmingham, Alabama

The **Thomas W. Pangborn Gold Medal** … For his outstanding contributions in developing, guiding and enhancing environmental health and safety in the metalcasting industry and broadly sharing knowledge with many hundreds of others throughout the industry.

Award of Scientific Merit

Liam Miller

Technical Director–Specialty Sands R&D, Minerals Technologies Inc./American Colloid Co., Hoffman Estates, Illinois

The **AFS Award of Scientific Merit** … For his significant scientific contributions to the metalcasting industry through his research, mentorship, papers, and presentations on important sand molding topics.

Service Citations

Michael Buyarski

COO, The Federal Metal Co., Bedford, Ohio

The **AFS Service Citation** … For his exceptional service to the metalcasting industry through contributions to the AFS Copper Alloy Division and involvement in developing lead-free copper alloys.

Dr. Mark Osborne

Senior Casting Engineer, Wabtec Corp., Fort Worth, Texas

The **AFS Service Citation** … For his outstanding service to the metalcasting industry through his many technical contributions to metalcasting technology, including nine patents, and his leadership in the AFS Light Metals Division, Research Board, and Technical Council.

Brian Rachwitz

Quality and Technical Services Manager, EJ, East Jordan, Michigan

The **AFS Service Citation** … For his meritorious service, mentorship, and leadership above and beyond his role at his company, through key roles on AFS technical committees, councils, boards, speaking at conferences, and leading high-impact industry research projects.

AFS Millionaires Safety Award

AFS congratulates the following AFS Corporate Member for achieving a million or more safe-hours worked without incurring a lost time injury or illness during the calendar year 2023:

Grede Castings - New Castle
(New Castle, IN)
1 million safe-hours

Le Sueur Incorporated
(Le Sueur, MN)
1 million safe-hours

Division Chairs & Program Chairs

Technical Divisions

Technical Council Officers

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Technical Advisor
Brunswick Corp.

Vice Chair:
Tim Hoyt
Product Services Engineering Manager
Allied Mineral Products

Additive Manufacturing Division

Chair:
Dave Rittmeyer
Director of Business Development
Matthews Additive Technologies

Vice Chair:
Kelley Kerns
Director of New Business Development
HA-International, LLC

Aluminum & Light Metals Division

Chair:
Herb Doty
Technical Specialist
General Motors

Vice Chair:
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Production Engineering Manager
Fairbanks Morse Engine

Cast Iron Division

Chair:
Lizeth Medina-Balliet
Manager of Quality and Technical Services
Neenah Foundry Co.

Vice Chair:
Ashley Marks
Senior Materials Engineer
John Deere Foundry

Copper Alloy Division

Chair:
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Vice Chair:
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Commercial Director Southern Region
Foseco

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Chair:
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President
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Vice Chair:
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Business Development Specialist
Electric Controls & Systems, Inc.

Environmental, Health & Safety Division

Chair:
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Founder
Mad River Strategies LLC

Vice Chair:
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Safety Director
Metal Technologies Inc.

Lost Foam Division

Chair:
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Metallurgist
Betz Industries

Vice Chair:
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Chair:
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Manager, Corporate Engineering
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Design Engineer
AMERICAN Cast Iron Pipe Company

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Chair:
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Professor
University of Northern Iowa

Vice Chair:
Sairam Ravi
Engineering Manager
Atek Metal Technologies

Steel Division

Chair:
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Professor
Western Michigan University

Vice Chair:
John Tartaglia
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Element Materials Technology

Management Divisions

Management Council Officers

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Soundcast

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Technical Director
Ductile Iron Society

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Neenah Foundry Company

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Chair:
Jordan Brown
Vice President
BCI Solutions, Inc.

Vice Chair:
John Letts
North America Sales
LAEMPE REICH

AFS Corporate Members

As of 2/26/2024

0-9

3DCeram Inc.
3D Systems

A

Aalberts Integrated Piping Systems
Aalberts Surface Technologies
ABC Coke
ABC Coke Drummond
ABP Induction LLC
Abrasive Technology Ltd.
Accucam Machining
Acme Foundry Inc.
Adalet
Advanced Pattern Works
Advantage Metals Recycling LLC
AERO Metals Inc.
Affival/Opta Group LLC
AF Gelhar Co. Inc.
AFK Corp.
AFS Institute
AFS Washington Office
Air and Energy Systems Inc.
Airfoil Impellers
Air Products & Chemicals Inc.
Ajax Tocco Magnethermic Canada Ltd.
Ajax Tocco Magnethermic Corp.
Akron Brass Co.
Akron Electric
Akron Foundry Co.
Akron Porcelain & Plastics
Alabama Casting LLC
Albarrie Environmental Services Ltd.
Alcast Co.
Alliant Castings
Allied Mineral Products Inc.
Allied Mineral Products LLC - Brownsville
Allied Mineral Technical Services LLC
Alpha Foundry Co.
Alpha Resins Inc.
Alpha Resources Inc.
Altair
Alu-Bra Foundry Inc.
Aluminum Alloys Inc.
Aluminum Castings Company LLC
America Makes
Americana Outdoors
American Castings LLC
AMERICAN Cast Iron Pipe Company
American Colloid Co.
American Foam Cast Inc.
American Foundry Society
American Iron & Alloys Corp.
American Pattern & CNC Works
American Valve & Hydrant
AMFIN SAS
AMIIC
Amsco Wear Products Inc.
Amsted Graphite Materials
Amsted Industries Inc.
Amsted Rail Co.
Amsted Rail Company Inc.
AMValor Cluny
Anderson Express Inc.
Anderson Global
Anthracite Industries Inc.
APPI Energy
Applied Ceramics Inc.
Applied Metallurgial Corp.
Aristo-Cast Inc.
Armstrong Rapid Manufacturing
Arnold Magnetic Technologies
Asbury Carbons Inc.
Asbury Wilkinson Inc.
ASC Engineered Solutions
Ashland Foundry Group
Asia Forging Supply Co. Ltd.
ASK Chemicals
ASK Chemicals Canada Corp.
ASK Chemicals de Mexico S de RL de CV
ASK Chemicals Hi-Tech LLC
ASK Chemicals Manufacturing S de RL de CV
ASK Chemicals Metallurgy Inc.
ATD Engineering & Machine
Atek Metal Technologies
Atlas Foundry Co. Inc.
Aurora Metals Division LLC (Hiler Industries)
Austin Foundry Corp.
Automation Solutions of America
Automation Systems & Design Inc.
Avalon Precision Metalsmiths
AW Bell Pty Ltd.
AY McDonald Mfg. Co.
Azterlan

B

B&L Information Systems Inc.
Badger Alloys Inc.
Badger Mining Corp.
Bahr Bros Manufacturing Co.
Baker Manufacturing Co.
Batesville Products Inc.
BCI Solutions Inc.
Bearon Manufacturing Inc.
Beaver Valley Alloy Foundry Co.
Benton Foundry Inc.
Bentonite Performance Minerals LLC
Bernier Cast Metals Inc.
Betz Industries
BHA Altair LLC
Bingham & Taylor Corp.
Bioservo
Blast Cleaning Technologies
Blastec Inc.
Boose Aluminum Foundry Co. Inc.
Boose Quality Castings (BQC)

Borchert Associates LLC
Brad Foote Gearing
Bradken
Brokk Inc.
BRP-US Inc.
Brunswick Corp.
Buck Co. Inc.
Burnham Corp.
Burnham Hydronics

C

CADDIS Systems
Cadillac Casting Inc.
C A Lawton Minster
Calhoun Foundry Co. Inc.
California Metal-X
Calumet Brass Foundry Inc.
Canfield & Joseph Inc.
Capital Refractories Inc.
CARBO
Carley Foundry Inc.
Carolina Metal Castings
Carpenter Brothers Inc.
Carrier Vibrating Equip Canada
Carrier Vibrating Equipment Inc.
Castalloy Inc.
Cast Aluminum Solutions LLC
Casting Solutions LLC
Cast Technologies Inc.
Caterpillar de Mexico
Caterpillar Hodges Casting Products
Caterpillar Inc.
Caterpillar Logistics Services Inc.
Caterpillar R&D Center (China) Co. Ltd.
Centre for Innovation & Technology N Mahalingam (CITNM)
Century Brass Works Inc.
CFM Corp.
Charlotte Pipe & Foundry Co.
Charter Aarrowcast
Charter Dura-Bar
Cheng Pao Foundry Co. Ltd.
Chesapeake Specialty Products Inc.
Chicago Magnesium Casting Co.
Chris Erhart Foundry & Machine Co.
Clansman Dynamics Ltd.
Clansman Dynamics USA
Clarksville Foundry Inc.
Clay & Bailey Mfg. Co.
CL Dews & Sons Fdry. & Mach. Co. Inc.
Clemex Technologies Inc.
CMI Novacast Inc.
Consarc
Consolidated Metco Inc.
Consolidated Mill Supply Inc.
Conveyor Dynamics Corp.
The CoreRoom
Cottingham & Butler
Covia
Craft Pattern & Mold Inc.
CR Maryborough Foundry
Cumberland Foundry Co. Inc.
Curto-Ligonier Foundries Co.
Cushman Foundry Co.
Custom Castings Limited
Customized Energy Solutions

D

D & L Foundry Inc.
Dakota Foundry Inc.
Dante Machine & Sales LLC
Dante Machine & Service
The David J Joseph Co.
Davis Alloys Manufacturing LLC
Decatur Foundry Inc.
Dee Manufacturing
Deere & Co.
Deere-Hitachi
Deeter Foundry Inc.
Demir Engineering Ltd.
Denison Industries Inc.
Dependable Foundry Equip Co.
De Pere Foundry Inc.
Desktop Metal
Didion International Inc.
Dinamec Systems LLC
DISA
Dixon Group Canada Limited
Donsco Inc.
Doral Corporation
Dotson Iron Castings
DR Metals
Dualtech Innovative Casting Tech Inc.
Durex Industries
Dustmaster Enviro Systems
D W Clark Inc.

E

Eagle Alloy Inc.
Eagle Aluminum Permanent Mold Castings
Eagle Group Manufacturers
Eagle Machined Products
Eagle Precision Cast Parts Inc.
EBAA Iron Inc.
EBAA Iron Sales Inc.
Eck Industries Inc.
Effort Foundry Inc.
Eirich Machines Inc.
EJ
Electric Controls & Systems Inc.
Elemental Metals
Elkem Metal Canada Inc.
Elkem Silicon Products
Elkhart Brass Mfg. Co. Inc.
Elyria Foundry Co.
Emerson Automation Solutions Appleton Group
EMSCO Inc.
Engis Corporation
Enterprise Casting Corporation
Epcor Foundry
Epic Machine Inc.
EQI Ltd.
Equipment Manufacturers Intl. Inc.
Erie Bronze & Aluminum Co.
Ermak Foundry & Machining Inc.
ETA Engineering Inc.
Everett Industries LLC
ExOne
EZG Manufacturing

F

Faircast Inc.
Fairmount Foundry Inc.
Falcon Foundry Co.
Fall River Foundry
Farrar Corp.
FATA Aluminum LLC
Federal Bronze Casting Ind Inc.
The Federal Metal Co.
Ferro Dokum San Ve Dis Tic A S
Ferroloy Inc.
Finite Solutions Inc.
FISA North America Inc.
Fisher Cast Steel Products Inc.
Flexovit USA Inc.
Flow Science Inc.
Flowserve Corp.
Flowserve Inc.
Flury Foundry Co.
Fonderie Laperle Inc.
Fonderies Bibby Ste-Croix Inc.
Ford Meter Box Co. Inc.
Forterra
Foseco
Foseco Mexico
Foundrion Group
Foundry Equipment Company
Foundry Solutions & Design
Foundry Solutions Metallurgical Services Inc.
Franklin Iron Works Inc.
Fresno Valves & Castings Inc.
Friends Foundry Inc.
Fritz Winter North America LP
Frohn NA
FROHN North America Inc.
Fujifilm Dimatix Inc.
Fusium

G

G & W Electric Co./Manufacturer's Brass and Aluminum Foundry
Galt Steel
Gamma Foundries Inc.
Gartland Foundry Co.
Gemco Engineers BV
Gemini Inc.
General Chemical Corp.
General Foundry Service Corp.
General Kinematics Corp.
General Motors
General Motors de Mexico S.A. de C.V.
General Motors Fairfax
General Motors of Canada Ltd.
Goldens' Foundry & Machine Co.
Graham-White Mfg. Co.
Greater Rockford Chamber of Commerce
Great Lakes Castings LLC
Grede Castings
Green Diamond Performance Materials
Green Packaging Inc.
GreenSand Controls Inc.
GridBeyond LLC
Griffin Canada Inc.
Griffin Industries Corp.
Ground Vehicle Systems Center
Grupo Unimetal
Guardian Bandsaw
Guardian Software Systems Inc.
Gudgeon Thermfire Intl Inc.

H

H & H Castings Inc.
HA Group
Hampton Foundry
HarbisonWalker International
Harmony Castings LLC
Harrison Steel Casting Co.
Harry H Reich Co.
Helluva Container
Henry Perkins Co.
Henry Pratt Co.
Henschel Andromat Inc.
Heraeus Electro-Nite Canada Ltd.
Heraeus Electro-Nite Co.
Heraeus Incorporated
Hickman Williams & Co.
Hickman Williams Canada Inc.
Highland Foundry International
Highland Foundry Ltd.
Hiler Industries (Kingsbury Cstg. Div.)
The Hill & Griffith Co.
Hitech Shapes & Designs
Hi-Vac Corporation
H Kramer & Co.
Hodge Foundry Inc.
Hodge International
Honsa Ergonomic Technologies
Hoosier Pattern Inc.
Howell Foundry LLC
Hsin Lien Machinery Parts Co. Ltd.
Humtown Products
Hunter Foundry Machinery Corp.
Huntington Ingalls Industries
Huttenes-Albertus GmbH
HWI a member of Calderys

I

I2r Power
ID Castings LLC
ID Castings LLC
IDEX Corp.
IMERYS
Impro Industries Mexico S. de R.L. de C.V.
Impro Industries USA Inc.
Indquip Co. LLC
Induction Iron Inc.
Induction Technology Corp.
Inductotherm Corp.
Inductotherm Group Canda Ltd.
Industrial Ceramic Products Inc.
Industrial Magnetics Inc.
Industrias John Deere S.A. de C.V.
Industry 63
InterTest Inc.
Iron Age Designs
I Schumann & Co.
ItalPresseGauss
IVI Inc.
IVI South Inc.

J

J & M Precision Die Casting Inc.
JOEST Inc.
John Deere
Joy Mark Inc.
J R Hoe & Sons Inc.
JuggerBot 3D
J Walter Miller Co.

K

K & H Precision Products Inc.
Kautex Textron
KCnG
Kent Foundry Co.
Keramida Inc.
Keystone Foundry
Kimura Foundry America Inc.
King Tester Corp.
Kirsh Foundry Inc.
Klein Palmer Inc.
Kloster Foundry Products
Knoebel & Associates
Kodiak Group
Kohler Co.
Kolene Corp.
Kore Mart Ltd.
Kubica Corp.
Kurtz Bros Inc.
Kurtz Ersa Inc.
Kuttner North America

L

LA Aluminum Casting Corp.
LAEMPE REICH
Lake Foundry 2020 Ltd.
Lakeshore Sand Co.
Larpen Metallurgical Service
The Lawton Standard Co.
Leading Marks LLC
LeClaire Manufacturing Co.
LECO Corporation
Lemfco Inc.
LeSueur Incorporated
Lethbridge Iron Works Co. Ltd.
Level 10 Industries
LGC/ARMI
Liberty Casting Co. LLC
Liberty Pattern Company
Liberty Technology Co. LLC
LightSpeed Concepts Inc.
Ligon Industries LLC
Lincoln Electric Automation Inc.
Lindberg/MPH
Lite Magnesium Products Inc.
Littlestown Foundry Inc.
Lodge Mfg. Co.
Louis Meskan Foundry Inc.
LPM North America Inc.

M

MacKenzie Castings LLC
Magaldi Technologies LLC
MAGMA Foundry Technologies Inc.
Magneco/Metrel Inc.
Magnus Metal
Mahoney Foundries Inc.
Mancuso Chemicals Ltd.
Manley Bros of Indiana Inc.
Matthews Additive Technologies
Matthews International Corp.
MCC International Inc.
McWane Ductile
McWane Inc.
Melling Engineered Aluminum Castings
Mercury Castings
Mercury Marine
Meritor Inc.
Metalcasting Design LLC
Metal Recycling Services LLC
Metal Technologies Auburn Casting Center
Metal Technologies Corporate Center
Metal Technologies Northern Foundry
Metal Technologies Ravenna Ductile Iron Plant
Metal Technologies SLP MX Foundry
Metal Technologies Three Rivers Gray Iron Plant
MetalTek International
MIA Manufacturing Inc.
Michigan Pneumatic Tool Inc.
Mid City Foundry Co.
Midland Manufacturing Co.
Midvale Industries Inc.
Miller and Company
Minerals Technologies Inc.
Miracle Steel-KOTAR
Mitchell Aerospace Inc.
Modern Equipment Co. LLC
Monett Metals Inc.
Moore M/R Specialty Co.
Morris Bean & Co.
Motor Wheel LLC
MPM Infosoft Pvt. Ltd.
MPM Private Limited
MT Systems Inc.
Mueller Canada
Mueller Co.
Mueller Water Products
Multi-Cast LLC
Multi-Vac a division of M & W Shops

N

National Peening Bedford Heights
National Peening Statesville
National Peening Wilmington
Naval Foundry & Propeller Center
Naval Foundry & Propeller Shop
NCDMM
Nederman MikroPul
Neenah Foundry Co.
Neptune Technology Group Inc.
New London Engineering
Nexthermal Corporation
Nohr LLC
Non-Ferrous Cast Alloys Inc.
Norican Group
Northern Iron & Machine
Northfield Manufacturing Inc.
NorthStar Products
Norwood Foundry Ltd.
NovaCast Solutions USA Inc.
NovaCast Systems AB
Novis Works LLC
NRB Metals LLC
The Nugent Sand Co. Inc.

O

Oil City Iron Works Inc.
Olson Aluminum Castings Inc.
Online Resources Inc.
Osco Industries Inc.
Otto Junker USA (Junker Inc.)

P

P&W Foundry Inc.
Pacific Alloy Casting Co. Inc.
Padnos
Palmer Engineered Products
Palmer Foundry Inc.
Palmer Mfg. & Supply Inc.
Pangborn Corp.
Patriot Foundry & Castings
Pattern Services LLC
Pearce Foundry Inc.
Penn-Mar Castings Inc.
Pentair
Penticton Foundry Ltd.
Performance Industrial Products LLC
Perkins Engine Co. Ltd.
Perma-Cast Co.
Pier Foundry & Pattern Shop
Pillar Induction
Pittsburgh Foundry & Machine
Plymouth Foundry Inc.
Poitras Foundry Ltd.
Porter Warner Industries Inc.
Porter Warner Industries Inc.
Precision Gage LLC
Precision Rail and Mfg. Inc.
Premier Aluminum LLC
Product Development & Analysis LLC
Production Pattern & Foundry Co.
Productora De Hierro Maleable S.A.
ProfitGuard LLC
Progressive Foundry Inc.
Progress Rail, a Caterpillar Company
Proterial
Prototype Casting Inc.
PT Coupling Company
P W Gillibrand Co.

Q

Quad City Safety Inc.
Quaker City Castings Inc.
Quality Castings Co.
Quality Electric Steel Castings LP
Quality Non-Ferrous Foundry

R

RAMPF Group Inc.
Redford Carver
Red Sky Lighting LLC
REFCOTEC Inc.
Refractory & Insulation Supply Inc.
Reliability Concepts
Renaissance Manufacturing Group - Waukesha LLC
RENO Refractories Inc.
Resource Recovery Corp.
Rheocast Co.
Rice Industries Inc.
Richmond Foundry LLC
Rio Tinto Alcan
Rio Tinto Aluminum Group
Rio Tinto Iron & Titanium Inc.
River Metals Recycling LLC
Roberts Sinto de Mexico
Rochester Metal Products Corp.
Rock Island Arsenal Joint Mfg. & Tech Cntr. (RIA-JMTC)
Rolls Royce Marine North America
Rolls Royce North America Inc.
Roloff Manufacturing Corp.
Romac Industries Inc.
RoMan Manufacturing Inc.

S

SafePath Solutions
Saint-Gobain Ceramics & Plastics
Sandmold Systems Inc.
Sandusky International Inc.
The Schaefer Group Inc.
Scheuch
Schust
Scientific Dust Collectors
Scott Sales Co.
Seabee Cast Steel Foundry
SELEE Advanced Ceramics
SELEE Corporation
Seneca Foundry Inc.
Sigma Engineered Solutions
Silver Dollar Castings Inc.
Simpson Technologies Corp.
SinterCast Inc.
SinterCast Ltd.
Sintex Minerals & Services Inc.
Sinto America
SIR Robotics Inc.
SIR Spa
Sloan Valve Co.
Smart Sand Inc.
Smith & Richardson Mfg. Inc.
Smith Foundry Co.
Solar Turbines Inc.
Southeastern Foundry Products & Foundry Coatings Inc.
Southland Metals Inc.
SP Foundry
Spring City Electrical Mfg. Co.
Spuncast Inc.
SRC Pipeflow Technology Center
Stahl Specialty Co.
Standard Alloys & Manufacturing
Standard Manufacturers Services Limited
Star Pipe Products
States Engineering Corp.
St. Louis Precision Cast Products
St. Marys Foundry, Ltd.
St. Paul Foundry

StrikoWestofen
Summit Foundry Systems Inc.
SunCoke Energy Inc.
Sun Metalon Inc.
Superior Aluminum Alloys
Superior Aluminum Castings Inc.
Supreme Cores Holdings LLC
Sure-Cast Alum Foundry Co.
Synchro ERP Ltd.
SYSCON Sensors

T

Taylor Foundry Co.
TB Wood's Inc.
TDJ Group Inc.
Tech Cast Limited
Technetronix LLC
Technical Metal Finishing
Techni-Cast Corp.
TechniSand Inc.
TEMC Metal & Chemical Corp.
Temperform Corp.
Tennetek Inc.
Textron Defense Systems
Textron Inc.
The Raymond Corporation
Thermotec Industries
TH Mfg. Co.
Thomas Machine & Foundry Inc.
Tinker Omega Sinto
Titan Robotics Ltd.
Tonkawa Foundry Inc.
Tooling & Equip International
Torrance Casting Inc.
Toscelik Profil ve Sac Endustrisi A.S.
Townley Foundry & Machine Co. Inc.
TPI Arcade Inc.
Tradesmen International
Transvalor Americas Corp.
TRC
Trebi North America Inc.
Trebi Srl
Tromley Industrial Holdings Inc.
Tyler Pipe Co.

U

Unimetal USA Inc.
United Brass Works Inc.
Universal Electric Foundry Inc.
Universal Welding & Engineering Inc.
Urick Ductile Solutions
Urschel Laboratories Inc.
US Aluminum Castings
U S Foundry & Mfg. Co.
USMFG Inc.
US Pipe & Foundry Co.

V

Valmet Inc.
Van Hydraulics Inc.
Verichek Technical Services Inc.
Vermont Castings
Vermont Foundry Co.
Versevo Inc.
Vesuvius Canada Refractories Inc.
Victaulic Co.
Victaulic De Mexico S. de R.L. de C.V.
Victaulic Lawrenceville
Viking Pump Inc.
Viking Technologies
Viking Wheel Blast Systems
Virginia Industries Inc.
VJ Technologies Inc.
Voestalpine Railway Systems Nortrak
Voss Pattern Co.
Voxeljet AG
Voxeljet America Inc.
Voxeljet China Co. Ltd.
Vulcan Engineering Co. Inc.

W

Wabash Castings Inc.
Wabi Iron & Steel Corp.
Wabtec
Ward Corporation
Ward Heat Treating
Ward Manufacturing LLC
Washburn Iron Works Inc.
Washington Mills Hennepin Inc.
The Wasmer Company LLC
Waterous Company
Watry Industries LLC
Waupaca Foundry Inc.
WDC Acquisition LLC
Wear-Tek
Weaver Materiel Service Inc.
Webb Wheel Products Inc.
Wedron Silica Co.
Weil McLain
Western Foundries Inc.
West Point Industries
West Salisbury Fdry. & Machine Co.
Wexford Sand Co.
WGB Industries Inc.
WGS Global Services LLC
Wheelabrator Group
Whibco Inc.
William Goetz and Associates
Wirco Inc.
Wisconsin Aluminum Foundry Co.
Wisconsin Oven Corporation
Wisconsin Precision Casting
Woodland/Alloy Casting Inc.

AFS Individual Member Benefits

Workforce & Career Development

Leadership Training & Sustainability
- AFS trains the current and future leaders of metalcasting

Building the Next Generation of Metalcasters
- Student chapters, Institute training, foundry demonstrations, Melting Point magazine and more attract new talent to the industry

Regional Chapters
- Only individual members may join AFS regional chapters

Casting Connection
- Individual members can network, ask questions and get answers from peers through this metalcasting social network

Event Discounts
- Deep discounts on registration for educational and networking events hosted by AFS (discounts vary)

Education

Instructor-Led Training
- Receive discounts on classes (in-person and online) for new and experienced metalcasters ($200 discount per person)

Foundry e-Learning Modules
- Receive discounted rate of $55 per module (half off the general rate of $110)

Free AFS Members Only-Webinars
- All individual members participate in 30+ technical and management webinars per year ($250 value per session)

Technical/Management/Research Support & Innovation

Committee Membership
- Only individual members are eligible to sit on AFS committees, which conduct cutting-edge research and help establish industry standards

Books & Publications

Modern Casting
- A subscription to one of the industry's leading trade magazines, delivered monthly ($115 value)

Book Discounts
- Get 25% discounts on all AFS-published technical books

AFS Library
- Receive free online access to the AFS Library, the world's largest collection of metalcasting research with more than 17,000+ papers and articles

AFS Insider News
- Stay up-to-date on industry news and AFS events with this weekly e-newsletter

For more information, contact **Kim Farrugia** at **800-537-4237** or **kfarrugia@afsinc.org**.




AFS Individual Member Application

Individual Annual Dues			
☐ Individual	$140	☐ International Technical	$255
☐ Corporate Individual	$75	☐ Teaching Associate	$70
☐ Retired	$25	☐ Student (Full-Time)	$20

Name _____ Job Title _____

Company _____

Address _____

City _____ State _____ Country _____ Zip/Postal Code _____

Telephone _____ E-mail _____

I desire affiliation with the following AFS Chapter _____

Do you wish to receive ***Modern Casting*** magazine? *(For Metalcasters)* ☐ Yes ☐ No

Do you wish to receive ***Casting Source*** magazine? *(For Industry Suppliers)* ☐ Yes ☐ No

Which best describes your business?

- ☐ Producer of metal castings (foundry, diecaster, ect.)
- ☐ Pattern and tooling shop
- ☐ Supplier of metalcasting equipment, raw materials or services
- ☐ Consultant/consulting engineer
- ☐ Research institute/testing lab
- ☐ Casting user/designer/buyer
- ☐ Educational institute/facility/military
- ☐ Other _____

What metals do you primarily work with?

- ☐ Iron
- ☐ Steel
- ☐ Aluminum
- ☐ Copper-base (brass, bronze, ect.)
- ☐ Magnesium
- ☐ Zinc
- ☐ Other _____

What is your reason for joining AFS?

- ☐ Boost career success & professional development
- ☐ Maximize my technical knowledge
- ☐ Deep discounts on AFS events and books
- ☐ Strengthen my professional network
- ☐ Participate in an AFS committee
- ☐ Support the important work of AFS
- ☐ Other _____

Payment Information

☐ Check enclosed (U.S. funds only) ☐ Bill company **Charge to:** ☐ American Express ☐ Mastercard ☐ Visa

Membership Length: ☐ One Year ☐ Two Years

The following information is required to charge your membership:

Account Number _____ Exp. Date _____ Security Code _____

Signature _____ Date _____

Return completed application to:

American Foundry Society | 35169 Eagle Way | Chicago, IL 60678-1351
Tel: 1-847-824-0181/1-800-537-4237 | Fax: 1-847-824-7848 | www.afsinc.org | e-mail: AFSmembership@afsinc.org

AFS Corporate Member Advantage

For Metalcasters

Industry Intelligence

Bi-Annual Metalcasting Forecast
- This crucial marketplace outlook is free to Corporate Members ($1,000 value)

Wage and Benefit Survey
- Key compensation information, free to participating Corporate Members ($1,000 value)

World Foundry Organization Annual Census
- A look at the state of the worldwide metalcasting industry is delivered free to Corporate Members

Employment Law Update
- A monthly summary prepared by our partner law firm to keep you apprised of key developments concerning OSHA regulations and inspections, NLRB decisions, wage-hour rules, pending workplace legislation and many more topics.

EPA, OSHA and Public Policy Advocacy Webinars
- Quarterly webinars on Key Policy Issues Affecting Metalcasters.

Workforce & Career Development

Leadership Training & Sustainability
- AFS trains the current and future leaders of metalcasting

Building the Next Generation of Metalcasters
- Student chapters, Institute training, foundry demonstrations, Melting Point magazine and more attract new talent to the industry

Regional Chapters
- Individual members may join AFS regional chapters

Casting Connection
- Members can network, ask questions and get answers from peers through this metalcasting social network

Industry Job Descriptions
- AFS' complete, detailed list of metalcasting industry job descriptions is available for Corporate Members to use for recruiting, evaluations, or other workforce needs

Metalcasting Job Board
- Corporate Members get a 50% discount when they post jobs on the AFS Job Board

Event Discounts
- Save on registration for educational and networking events hosted by AFS (discounts vary)

AFS Energy Program
- Corporate Members can reduce their electricity and natural gas supply costs

Government Advocacy

Legislative Influence
- On Capitol Hill, AFS shapes a better business climate for metalcasters

Education

In-Plant Training
- Corporate Members receive special rates on in-depth training at their facilities (10% off is the discounted rate)

Instructor-Led Training
- Receive discounts on classes (in-person and online) for new and experienced metalcasters ($200 discount per person)

Free AFS Members-Only Webinars
- All individual members and employees of Corporate Members participate in technical and management webinars ($250 value per session)

Foundry E-Learning
- Only Corporate Member companies are eligible to a discounted subscription for unlimited access to AFS Institute e-Learning in English and Spanish (at an additional cost on an annual basis)

Technical/Management/ Research Support & Innovation

Driving Research
- 8% of corporate dues support AFS research

Committee Membership
- Individual members are eligible to sit on AFS committees, which conduct cutting-edge research and help establish industry standards

Technical Assistance
- The AFS technical services team is ready for your calls on technical, metallurgical, and EHS questions, as well as casting design assistance, with top priority going to Corporate Members

HR Consulting
- AFS provides foundry-specific insights and assistance for your human resources needs

Energy Consulting
- AFS can help with questions about energy costs, consumption and efficiency

Books & Publications

Modern Casting
- A subscription to one of the industry's leading trade magazines, delivered monthly ($115 value)

International Journal of Metalcasting
- A subscription to AFS' metalcasting research journal ($199 value)

Book Discounts
- Get price breaks on AFS-published technical books (discounts vary)

AFS Library
- Receive full online access to the AFS Library, the world's largest collection of metalcasting research papers and articles

AFS Insider News
- Stay up-to-date on industry news and AFS events with this weekly e-newsletter

AFS Nonferrous Bulletin
- Keep yourself informed about nonferrous news and events through this newsletter, available in both print and digital formats.

Business Opportunities & Branding

Trade Show/Exhibit Space Discounts
- Save money on exhibits and attendance at CastExpo and Metalcasting Congress (discounts vary)

Referrals
- AFS refers all phone, e-mail and online inquiries to Corporate Members

Logo
- Corporate Members can add credibility to their business by using the AFS logo on brochures and websites

AFS Shipping Solutions
- Take advantage of shipping savings and more with AFS' shipping program (savings vary)

Casting Source Directory
- Online and Print: Corporate Member metalcasters are featured in the Casting Source Directory.

For more information, contact **Kim Farrugia** at **800-537-4237** or **kfarrugia@afsinc.org**.

Metalcasters Corporate Membership Application

Dues Category Based on Annual Sales Volume in Million Dollars	Annual Dues	Free Corporate Affiliate Members Including Corporate Contact
$0 - 1.99 Million	$1,240	2
$2 - 3.99 Million	$1,850	3
$4 - 6.99 Million	$2,480	4
$7 - 10.99 Million	$3,090	5
$11 - 16.99 Million	$3,690	6
$17 - 24.99 Million	$4,330	7
$25 - 34.99 Million	$4,940	8

Dues Category Based on Annual Sales Volume in Million Dollars	Annual Dues	Free Corporate Affiliate Members Including Corporate Contact
$35 - 46.99 Million	$5,545	9
$47 - 60.99 Million	$6,180	10
$61 - 75.99 Million	$6,785	11
$76 - 93.99 Million	$7,390	12
$94 - 113.99	$10,500	13
$114 - 199.99 Million	$14,845	14
Above $200 Million	$18,480	15

**Non-U.S. based company dues are 10% lower per federal regulations on association services.*

Your firm's sales volume last year from **casting-related sales only (include all North American facilities)** $ _____

Company Name _____ Number of Employees _____

Company Address _____ City _____ State _____ Zip _____

Company Telephone _____ Company Website _____

Company Social Media _____

Key Contact for Membership* _____ Title _____ E-mail _____

Key Contact for Human Resources* _____ Title _____ E-mail _____

Key Contact for Marketing/Sales* _____ Title _____ E-mail _____

Key Contact for Engineering/Manufacturing* _____ Title _____ E-mail _____

** AFS Staff will follow-up with key contacts for their seat names.*

Sign key contacts up for ***Modern Casting*** magazine subscription. ☐ Yes ☐ No

Primary metal focus

- ☐ Aluminum
- ☐ Copper-base (brass, bronze, ect.)
- ☐ Iron
- ☐ Magnesium
- ☐ Steel
- ☐ Zinc
- ☐ Other_____

Primary process

- ☐ Green sand
- ☐ Investment
- ☐ Lost foam
- ☐ Permanent mold
- ☐ Other_____

Reason for joining AFS

- ☐ Enhanced exposure to casting consumers
- ☐ Industry insight/technical information
- ☐ Training/workforce development
- ☐ Support industry initiatives
- ☐ Other_____

Payment Information

☐ Check enclosed (U.S. funds only) ☐ Bill company **Charge to:** ☐ American Express ☐ Mastercard ☐ Visa

Membership Length: ☐ One Year ☐ Two Years

The following information is required to charge your membership:

Account Number _____ Exp. Date _____ Security Code _____

Signature _____ Date _____

Return completed application to:

American Foundry Society | 35169 Eagle Way | Chicago, IL 60678-1351
Tel: 1-847-824-0181/1-800-537-4237 | Fax: 1-847-824-7848 | www.afsinc.org | e-mail: AFSmembership@afsinc.org

Casting of the Year

Power Frame

St. Marys Foundry, Ltd.
(St. Marys, Ohio, USA)

Material:
Ductile ASTM A395 60-40-18

Process:
Gravity Pour - Nobake sand

Weight:
6,600 lbs.

Dimensions:
67.4 in. x 53.4 in. x 43.6 in.

Application:
Frac. pump frame

Outstanding Achievement:

MY2021 Acura-TLX Steering Hanger Beam (SHB) Assembly

Meridian Lightweight Technologies
(Strathroy, Ontario, Canada)

Material: AM60B magnesium alloy
Process: High pressure die casting (HPDC)
Weight: 5.43 kg.
Dimensions: 34 mm. x 154 cm. x 70 cm.
Application: Provides the first-rate rigidity and safety with weight reduction and energy management.

Best Example of a Conversion

Row Cleaner Shoe

Lethbridge Iron Works Company Ltd.
(Lethbridge, Alberta, Canada)

Material:
80-55-06 Ductile Iron

Process: Greensand (Hunter 10)
Weight: 7.3 lbs.
Dimensions: Approx. 8 in. x 7 in. x 6 in.
Application: Agriculture Equipment - removes debris from the seed trench while seeding.

Newcomer of the Year

GSI Transit Truck Set

Amsted Rail - Granite City
(Granite City, IL, USA)

Material: 2% Nickel Steel
Process:
No Bake Sand - 3D Print
Weight:
3,150 lbs. and 2,200 lbs.
Dimensions:
56 in. x 145 in. x 26 in. and 31 in. x 117 in. x 23 in.
Application:
Provide support and mobility to cars.

Best in Class

Battery Electric Vehicle Semi-Trailing Arm

Linamar Structures
(Fruitport, Michigan, USA)

Material: A356-T6 Aluminum
Process: Green sand molding
Weight:
23.5 kg. cast/19.6 kg. mach.
(51.8 lb. cast/43.2lb. mach.)
Dimensions:
656.10 mm. x 724.27 mm. x 325.43 mm.
Application: Rear chassis/Suspension arm

Best Prototype or Innovation

Anchor

Matthews International
(Pittsburgh, Pennsylvania, USA)

Material:
Custom Bronze Alloy
Process: Sand casting
Weight: 14.6 lbs.
Dimensions: 20 in. x 12.5 in. x 3 in.
Application: A piece to be used for architectural or memorial functions - depending on customization.

Honorable Mention

Diversion Valve Body

Lee Brass Acquisitions LLC.
(Anniston, Alabama, USA)

Material: C89833
Process:
3D printed sand mold
Weight: 17.8 lbs.
Dimensions: 9.5 in. x 5.19 in.
Application:
Used in the waste water industry.

Honorable Mention

Bearing Housing

Impro Industries
(Diamond Bar, California, USA)

Material: Ductile iron
Process: Green sand molding
Weight: 9.85kg
Dimensions:
13 in. ×10.5 in. ×5 in.
(328 mm. × 265 mm. × 129 mm.)
Application: Transmission system of Commercial Vehicles

Honorable Mention

V12 Outboard Engine Oil Sump

Watry Industries LLC
(Sheboygan, Wisconsin, USA)

Material:
A356.0 - T6
Process:
Reverse Tilt Semi-Perm Mold
Weight: 51 lbs.
Dimensions:
23 in. x 18 in. x 15 in.
Application:
Reservoir for engine oil.

Upcoming AFS Conferences

2024 Advanced Waste Seminar
May 15 – 16, 2024 | Schaumburg, IL

This seminar is for individuals with a basic knowledge and understanding of EPA RCRA/solid waste regulations and waste characterization. It will build on basic knowledge with advanced practical knowledge, tools and techniques needed to address relatively complex foundry waste and beneficial use issues. This two-day seminar will cover the following topics regarding foundry waste AND byproducts: regulatory overview, identification & characterization, onsite management, storage and shipment, generator treatment, end users/TSDFs, and compliance demonstration.

2024 Government Affairs Fly-In
June 11 – 12, 2024 | Washington D.C.

Issues on Capitol Hill have millions of dollars of implications for your company, including taxation, Buy America, trade enforcement, workforce policies, EPA rulemaking, and OSHA regulations. Each year, AFS members from across the entire supply chain gather to advocate for the metalcasting industry, grow the metalcasting economy, and get an inside look at policies that affect the industry.

2024 AFS Talent Development & Retention Summit
June 19 – 20, 2024 | Schaumburg, IL

Talent development and retention is crucial to the success of the metalcasting industry. In fact, AFS Quarterly Surveys document that overcoming the talent shortage is the greatest challenge facing our industry. Now is the time for your company and our industry to come together for solutions!

Join other metalcasting professionals for the AFS Talent Development & Retention Summit in Schaumburg, Illinois on June 19-20. As an attendee, you will gain the following benefits:

- Strengthen your ability to plan for succession in your company and to retain employees.
- Gain insight from a foundry industry veteran about supervisor development training principles.
- Bolster your understanding of live shooter prevention and response best practices from a nationally recognized expert. What you learn could save lives!
- Receive a briefing on where the foundry industry has been, where it is today, and where it is headed!
- Participate in a discussion about worker attraction and retention best practices.

The Talent Development & Retention Summit is also offering a special buy one registration, get one registration 50% off for attendees from the same organization. To take advantage of this offer, please call customer service directly at (800) 537-4237.

2024 Chapter Officers Conference
July 23 – 24, 2024 | Schaumburg, IL

Save the date and assemble a delegation to represent your AFS chapter at the Chapter Officers Conference at AFS headquarters in Schaumburg, IL. In addition to a fun social event at Topgolf the evening of July 23, chapter leaders from all AFS chapters will convene on July 24 to discuss best practices in meeting planning, communications, recruitment, student engagement, and more. There will be a comprehensive overview of AFS membership benefits as well as the resources available to you as chapter leaders.

2024 Foundry Industry 4.0 Conference
July 30 – 31, 2024 | Milwaukee, WI

Industry 4.0 is here. Forward-thinking metalcasters are leveraging innovation and technology to boost productivity, profits, and worker safety right now. Attend our upcoming conference to discover practical strategies to implement Industry 4.0 in your foundry or die casting facility. Learn how data-driven manufacturing, automation, and workforce training can future-proof your operations for sustained success. Network with industry experts and walk away with an action plan tailored to your unique goals.

2024 Foundry Leadership Summit
September 22 – 24, 2024 | Colorado Springs, CO

Mark your calendars for the premier metalcasting industry Leadership Summit. Enjoy networking with a friendly group of nearly 150 leaders from across the metalcasting supply chain and hear from world-class speakers discussing leadership, economic, workforce, technical and political issues that go to the heart of leading your business.

All this at one of the nation's premier 5-star resorts! Registration will open in spring 2024.

36th Environmental, Health and Safety Conference
October 1 – 3, 2024 | Grand Rapids, MI

The AFS Environmental, Health and Safety (EHS) Conference returns for its 36th year as the premier event for foundry industry EHS professionals. Taking place October 1-3, 2024, at the Amway Grand Plaza in Grand Rapids, Michigan, the conference brings together leading experts and peers to discuss the latest developments, innovations, and best practices in foundry EHS. From foundry case studies to updates from Washington D.C. to networking with other professionals, this event has what you need to enhance your knowledge, EHS programs, and performance.

2024 Aluminum Specialty Conference
October 15 – 16, 2024 | Mars, PA

Expand your knowledge of the aluminum metalcasting industry at the 2024 AFS Aluminum Specialty Conference. This conference will feature experts in molding, melt prep, casting process controls, and post-casting processes with the newest knowledge broken down to target engineering, operators, and plant managers making this a must-attend for all foundry personnel and casting users.

2024 AFS Young Professionals Annual Meeting
October 28 – 29, 2024 | Charlotte, NC

Join fellow young professionals from across the metalcasting supply chain at the 2024 AFS Young Professionals Meeting. Attendees will learn key tools to help them grow as a metalcasting professional and prepare for leadership roles.

2024 Melting Conference
November 6 – 7, 2024 | Louisville, KY

Hosted by the AFS Melting Methods & Materials Division, the 2024 Melting Conference brings together industry experts to share their insights in various melting applications. Sessions will cover a wide range of topics, including cupola and electric melting practices, holding applications, melt efficiency, melt deck and furnace safety, refractory applications and best practices, labor retention, supply chain challenges, and energy efficiency.

CastExpo 2025
April 12 – 15, 2025 | Atlanta, GA

CastExpo 2025 is your chance to connect with suppliers, peers, and customers. Catch new ideas to excel at your job and improve your business. Take advantage of the heralded technical and management sessions, plus AFS Institute courses, keynote speakers, shared interest group meetings, and the AFS Hub on the exhibit floor.

Additionally, World Foundry Organization (WFO) will co-locate with AFS and present the 2025 World Foundry Technical Forum in Atlanta. The WFO is the recognized center of strategic foundry knowledge at the global level, designed to develop, enhance and improve the production of metalcastings through the latest technical and sustainable industry practices. The World Foundry Technical Forum is held once every two years.

Upcoming AFS Institute Courses

Gating and Riser Design 101
Live Online | May 7 – 9, 2024

Casting quality and yield are directly impacted by gating design. This course guides participants through the basic functions of gating and risers to provide clean, sound and functional castings.

Casting Cost Estimating
Live Online | June 17 – 19, 2024

Cost estimating is a critical factor in ensuring a manufacturer continues to acquire customers and remains profitable.

AFS Institute In-Plant Training provides you with high-value, immediate-impact, best-in-class, unbiased, and professional training **at your facility for an affordable price**. It is the best way to deliver new skills training to a large group of employees. In-Plant Training provides you with the ultimate in convenience: no employee travel expenses and a familiar environment while maximizing training efficiency and value.

In-Plant Training offers:

- Customized training to fit your company's workforce needs
- Efficient, cost-effective skills training for a large group
- Hands-on, engaging activities to reinforce skills development
- Team-building opportunities across roles and departments

NEW: Introduction to Supervisor Development available now.

Special pricing available for AFS Corporate Members.

For more information on **In-Plant Training**, visit **www.afsinc.org/in-plant-training**.

To schedule your **In-Plant Training**, contact **Jen Christian** at **jchristian@afsinc.org**.

Please join us next year at

AFS CASTEXPO & METALCASTING CONGRESS

April 12 – 15, 2025
Georgia World Congress Center, Atlanta, GA

CastExpo 2025 is your chance to connect with suppliers, peers, and customers. Catch new ideas to excel at your job and improve your business. Take advantage of the heralded technical and management sessions, plus AFS Institute courses, keynote speakers, shared interest group meetings, and the AFS Hub on the exhibit floor.


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