# 2025 Sand Casting Conference

Pittsburgh, Pennsylvania, USA
9 - 10 September 2025

ISBN: 979-8-3313-2659-3

**Printed from e-media with permission by:**

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571


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Printed by Curran Associates, Inc. (2025)



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# AFS Sand Conference

**September 9 – 10, 2025**
**Embassy Suites by Hilton Pittsburgh Downtown**
*Pittsburgh, PA*

Join us at the 2025 Sand Conference – where innovators and industry leaders converge! Dive into compelling case studies and dynamic discussions on cutting-edge molding technologies, environmental compliance, and process evaluation. Network with peers through process-focused presentations that spotlight real-world applications, showcasing advancements in process improvement and technology transfer. Don't miss this opportunity to explore and adopt new methodologies and state-of-the-art equipment poised to meet the industry's future demands.

## Tuesday, September 9, 2025

**7 a.m.** **Registration/Breakfast**

**8 a.m.** **Welcome/Introductions**
**Scott Giese,** *Molding Conference Chair, University of Northern Iowa, Cedar Falls, IA*

**8:15 a.m.** **KEYNOTE: The Value of Foundries to Corporations** 1
**Greg Colvin,** *Honeywell Aerospace, Phoenix, AZ*

**9:00 a.m.** **PANEL: Bentonite Activation**

- **Basic Science of Clay** 12
  - **Michelle Ring**, *Ductile Iron Society, Carmel, IN*
- **Causticized Lignite** 23
  - **Liam Miller,** *American Colloid Co., Hoffman Estates, IL*
- **Water Surfactants in Green Sand** 32
  - **Matt Hall,** *REFCOTEC, Inc., Orrville, OH*
- **Clay Activation Principles and the Effects of Advanced Oxidation** 44
  - **David Paulsen,** *Furness-Newburge, Inc., Versailles, KY*

This panel answers “what is clay activation? And how do I improve it?”, focusing on key methods to improve sand properties and foundry efficiency. Topics include the fundamentals of bentonite clay structure, the role of water in activation, and the benefits of causticized lignite as a clay modifier and dispersant. The use of surfactants and advanced oxidation processes to improve clay activation and reintroduce recovered clay will also be discussed. The panel will highlight case studies and practical insights for optimizing sand systems while reducing costs and environmental impact.

**10:45 a.m.** *BREAK*

**11:00 a.m.** **A New Approach to an Old Process: Moving from Green Sand to PUCB Stack Molding** 56
**Aaron Kaboff,** *HA Group, Westmont, IL*

With Environmental initiatives increasing across the industry and within our government, it is important to consider new technologies to reduce our effect on the environment. An emerging technology that is showing benefits is Stack Molding. In testing, Stack Molding can decrease the amount of sand, resin, equipment footprint, and manpower needed to produce quality castings. With the added benefit of Silicate and Biodiesel technologies, foundries will be able to reduce not only their emissions, but also the cost to produce quality castings. This

presentation reviews the advantages of Stack Molding as well as environmentally friendly resin technologies that optimize the benefits and makes it a premier approach to high production casting environments.

**11:30 a.m.** **Automated Digital Clay Analyzer** 64
**Jennifer Bentz**, *SRC Pipeflow Technology Center, Saskatchewan, Canada*

Clay minerals are an important material input into the production process for many industries, including foundries, and can affect the process even in small quantities, even at 1%. It is therefore important for these industries to measure clays accurately and reliably in a timely fashion. The current method for measuring clays is a manual laboratory method (the Methylene Blue Index), that is time-consuming, potentially unreliable, and subjective based on the visual determination of a titration endpoint by a technologist. SRC's Pipeflow Technology Centre™ has developed an automated digital clay analyzer that increases the reliability and speed of the active clay measurement that also has online clay analysis capability.

**12:15 p.m.** *LUNCH*

**1:15 p.m.** **The Role of Dust Collection in Optimizing Foundry Sand Systems** 72
**Jay Morrison,** *Carpenter Brothers, Inc., Mequon, WI*

Effective dust collection is a critical component of modern foundry sand systems. This presentation explores how dust collection systems affect operational efficiency, environmental compliance, and worker safety in the foundry. By capturing fine particulate matter, these systems prevent contamination of the sand, improve casting quality, and reduce wear on machinery. Additionally, proper dust control and monitoring contributes to regulatory adherence and creates a safer, healthier workplace. Key topics will include the mechanics of dust collection, integration within sand reclamation processes, and strategies for optimizing system performance to meet production and environmental goals.

**1:45 p.m.** **3D Printed Sand Design Options, Printer Maintenance, and The Future of Sand Printing** 84
**Dave Rittmeyer,** *Matthews Additive Technologies, Pittsburgh, PA*

Taking advantage of 3D Printed Sand works best when your designs match the 3DPS's capabilities. Knowing the pros and cons of different systems will help you create better designs. Are you looking to bring 3D Printed Sand operations in house? What routine maintenance will need done to keep the printer running at its optimal performance? With the turmoil of the current manufacturers, what may the future of 3DPS look like? We will discuss the printer maintenance basics along with the latest information coming from the investment group that now controls ExOne and Voxeljet.

**2:15 p.m.** *BREAK*

**2:30 p.m.** **PANEL*:* Technical Marketing**

- **Panelists:**
  - **Missy Gruwell,** *Simpson Technologies Corp., LaGrange, GA* 107
  - **Shelly Dutler,** *KE Collab LLC, West Dundee, IL* 114
  - **Monica Fisher,** *HA Group, Westmont, IL* 121

Marketing isn't just for sales. This panel will share practical ways technical experts can support company goals through communication, branding, and outreach.

A look at personal branding for technical employees—how simple, everyday actions can help you represent both yourself and your company more effectively. Then, a case study of a recent product launch will be presented from a marketing point of view. From initial trials through foundry production, the result wasn't just strong sales, it was lasting customer support driven by performance and trust. Finally, we'll discuss the role of technical education as marketing. Creating useful content—whether it's technical papers, how-to guides, or videos—can help customers

understand your products and expand their foundry knowledge base. This panel offers straightforward, real-world examples of how marketing and technical can work to support each other.

**4:00 p.m.** **IJMC Molding Methods & Materials Research Update** 126
**Tom Prucha**, *IJMC Editor, Metal Morphasis LLC, Rochester Hills, MI*

Sand casting continues to offer the most economical approach to produce complex shaped metal components in the widest variety of cast materials. The IJMC, along with the AFS Transactions, is the best repository for papers on the global advances in research and technology helping to present that information and enhance our knowledge and understanding of sandology. Over the past few years numerous papers of various topics that include chemical binder system and bond development, additives, sustainable materials and beneficial reuse, alternative sands and aggregates, new mold and core making processes, process simulation and modeling, sand testing and evaluation techniques, sensor development, Additive Manufacturing -3D Sand Printing, data collection and Industry 4.0, and other optimization research are some of the areas concerning molding methods and materials that have been published in the International Journal of Metalcasting (IJMC). This talk will review some key findings from these papers and potential areas for further investigation to help to continue to advance sand technology for metal castings.

**4:30 p.m.** **Day 1 Concludes**

**5:15 p.m.** **Networking Reception** *(drinks & appetizers)*

## Wednesday, September 10, 2025

**7 a.m.** **Breakfast/Registration**

**8 a.m.** **Welcome/Introductions**
**Anton Colon,** *The Nugent Sand Co. Inc., Norton Shores, MI*

**8:05 a.m.** **PANEL: Lowering Odor and Smoke During Shakeout: Binder Technologies**
*(15–20-minute presentations followed by 10-15 minute discussion)*

- **Joe Muniza,** *ASK Chemicals, Dublin, OH* 144
- **Aaron Kaboff,** *HA Group, Westmont, IL* N/A
- **Collin DeWood,** *REFCOTEC, Mason, IL* 153

The shakeout process in foundries is a critical stage where molds are broken apart to retrieve castings, but it is also a significant source of odor and smoke emissions. Regulation of these emissions, primarily caused by the thermal decomposition of organic binders during casting, continue to come under higher scrutiny This presentation explores innovative binder technologies aimed at mitigating odor and smoke generation during core / mold making, core storage and during the shakeout process. By examining advancements in low-emission binder formulations, the presentation will demonstrate the effectiveness in reducing volatile organic compounds (VOCs), smoke and odorous compounds.

The presentation will also highlight the integration of these technologies with process optimizations to achieve sustainable casting operations. Results from pilot trials and industrial applications demonstrate that these binder solutions not only reduce environmental impacts but also improve air quality and regulatory compliance within foundry operations. This research underscores the potential of binder innovations to align foundry processes with evolving environmental standards while maintaining casting quality and efficiency.

**9:15 a.m.** **Monitoring Sand Systems, Material Usage, and Waste Streams for Process Stability and Maximum Cost Effectiveness** 160
**Brian Rachwitz,** *EJ, East Jordan, MI*

Monitoring sand system properties is important for maintaining the long-term stability of green sand casting processes. At times changes made to the sand system may seem minor but can result in significant changes within the system affecting casting quality and cost. A process monitoring testing program and data analysis of usage/generation of materials can help ensure that issues are detected quickly, and actions can be implemented to maintain stability.

**9:45 a.m.** **Impact of Sand Testing Frequencies** 177
**Lauren Innis,** *The Lawton Standard Co., De Pere, WI*
*Pre-recorded Presentation*

Properly set sand testing frequency and can improve process control—but when testing frequency doesn't match operations, it can mask variation or even create it. This presentation draws on examples from foundries, showing how overly frequent Methylene Blue testing led to unnecessary adjustments and increased variation, while other fixed-schedule testing can miss process shifts. Finding the right test frequency can result in meaningful data and stable operations.

**10:15 a.m.** *BREAK*

**10:30 a.m.** **Sand Segregation** *(Importance of Controls in Sand Handling; Keeping Distribution)* 183
**Dorothy Havlin,** *The Nugent Sand Co. Inc., Norton Shores, MI*

Sand segregation poses significant challenges to mold and core-making processes which can adversely affect casting quality. How and why does segregation occur and what consequences can result from variability in sand distribution.

**11:00 a.m.** **PROCESS- Case Study Sand Testing: Reading the Numbers** 196
**Kiel Krause,** *American Colloid Co., Hoffman Estates IL*

Sand test results provide more than standalone numbers. First-level analysis checks individual properties against targets and looking for trends, while second-level analysis examines ratios—such as strength relationships and water-to-clay balance—that reveal deeper system trends.

**11:45 a.m.** **Prelaunch E-Publication Preview: AFS Mold & Core Test Handbook, 6th Edition** 207
**Travis Frush,** *American Foundry Society, Schaumburg,* IL

This presentation will provide a preview of the 2026 launch of the 6th Edition of the AFS Mold & Core Test Handbook offered in a new digital publication platform. With a focus on AFS's efforts to improve digital accessibility to its various publications, a mobile-friendly E-Reader application platform is being developed to add functionality and interactive resources to improve the user experience. With video, live links and downloadable spreadsheets to enhance the AFS standard mold and core test procedure utilization, the 6th Edition handbook will offer added value to your operation or laboratory. Key features of the E-Reader platform will be defined, explained and highlighted with a live demonstration of the upcoming handbook release.
This project is possible through research sponsored by the Defense Logistics Agency Information Operations, J68, Research & Development, Ft. Belvoir, VA and DLA Troop Support, Philadelphia, PA.

**12:15 p.m.** *LUNCH*

**1:15 p.m.** **Case Study: Sand System Prep Before Technical Reviews** 218
**Caitlyn Dickson,** *EJ, Elmira, MI*

Effective technical audits/visits start with prework and preparation. This presentation reviews what to know before the visit, and the value of reviewing your green sand system and data collection ahead of time. By understanding system turnover, equipment performance, and key process variables upfront, you can focus efforts and the result is a more effective visit.

**1:45 p.m.** **Regulatory Update - Exothermic Products** 230

**Jeff Krause,** *HA-International, LLC, Westmont, IL*

This presentation will review the status of regulatory developments related to exothermic products as they concern the metal casting industry. In September 2023 DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a public notice explaining how DOT is currently interpreting transport regulations for products containing thermite, such as exothermic sleeves and hot topping products. The notice states that such products will be presumptively classified as explosive (Class 1), and upon completion of classification testing may be reclassed as flammable solids (Class 4.1), but no less. This position has serious implications for the foundry industry, which is one of the larger identified users of thermite for industrial applications, and which currently treats such products as non-regulated. We will review actions AFS and a consortium of producers has taken to address this issue both with PHMSA, and with a United Nations working group focused on developing new tests, criteria and hazard mitigation requirements for these products. We will also discuss hazards presented by these products and actions you can take to manage risks associated with their use in your facility.

**2:15 p.m.** **Turning Heat into Harmony: A Case study in optimized sand cooling and Flow in a Green Sand System** 237
**Carola Basaj,** *Textron Inc. – CWC Castings, Muskegon, MI*

This presentation explores a case study on improving sand cooling and sand flow management within a green sand foundry. By integrating spill sand into the loop system and refining water addition parameters, the process achieved more consistent sand temperatures and reduced late water addition. The study also highlights bin sequencing strategies that increased sand storage capacity and enabled smoother mold line operations. These simple changes using existing equipment collectively enhanced sand quality, minimized swings in temperature and moisture, and supported continuous muller operation—even during production interruptions. Attendees will gain practical insights into optimizing sand handling systems for better thermal control and operational efficiency.

**2:45 p.m.** *BREAK*

**3:00 p.m.** **Panel: Sand Reclamation**

- **Pneumatic Reclamation** 256
  **Mark Cotton,** *Simpson Technologies Corp., Alpharetta, GA*

- **Thermal Reclamation** 269
  **Zach Meadows***, EC & S, Birmingham, AL*

- **Clay Reclamation** 276
  **Mark Pine,** *Sinto America, Grand Ledge, MI*

Sand reclamation methods—thermal, pneumatic, and clay recovery—allow foundries to reduce waste, lower costs, and improve sustainability. This presentation reviews each approach, environmental impacts, and economic benefits. Case studies highlight how reclamation can affect casting quality, system health, and overall foundry efficiency.

**4:30 p.m.** **PROCESS: Case Study: Making Sand Reclamation a Priority** 282
**Kylee Rothenburger,** *MPS Mankato LLC, Mankato, MN*

**5:00 p.m.** *CONFERENCE CONCLUDES*