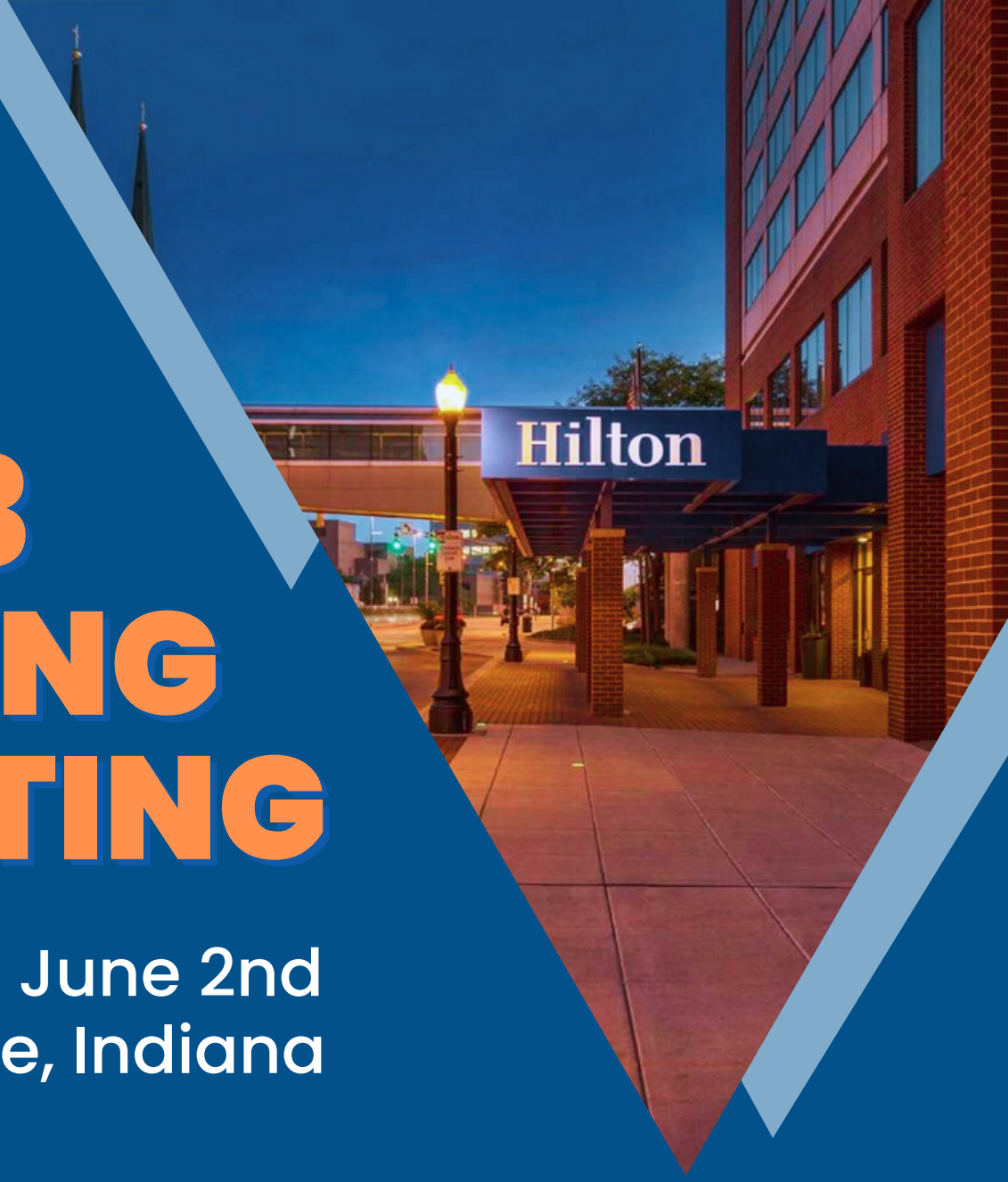


2023 SPRING MEETING

May 31st - June 2nd
Fort Wayne, Indiana

Thank you for joining the Ductile Iron Society and your industry peers for technical sessions, networking opportunities, and a tour of Hoosier Pattern, Inc.

The Hilton Fort Wayne at the Grand Wayne Convention Center

1020 Calhoun St, Fort
Fort Wayne, Indiana

TABLE OF CONTENTS

Wi-Fi Info

Wi-Fi NAME: GrandWayneGuest
This is an open network and a password is not needed.

WEDNESDAY SCHEDULE OF EVENTS

(Please note, attendees are responsible for their own breakfast and lunch.)

TIMES ARE EST	WEDNESDAY, MAY 31
12:00 - 2:00 PM	Research Committee Meeting Calhoun Ballroom A
2:00 - 3:00 PM	Marketing Committee Meeting Calhoun Ballroom B
2:00 - 3:00 PM	Membership Committee Meeting Calhoun Ballroom C
2:00 - 3:00 PM	Program & Publications Committee Meeting Calhoun Ballroom D
2:00 - 3:00 PM	University Relations Committee Meeting Calhoun Ballroom A
3:30 - 5:30 PM	Board Meeting Calhoun Ballroom D
3:30 - 5:00 PM	Metalcasting Forum Calhoun Ballroom A
6:00 - 8:00 PM	Reception The Gallery

THURSDAY SCHEDULE OF EVENTS

(Please note, attendees are responsible for their own breakfast.)

All Technical Sessions will be held in the Calhoun Ballroom.

TIMES ARE EST	THURSDAY, JUNE 1
8:00 AM - 9:00 AM	**Impact of Steel Scrap Tramp Elements in Ductile Iron Properties** Paul Sanders & Dale Dewald, Michigan Tech
9:00 AM - 9:45 AM	**Internships: How to do an Internship, The Value of Internship** Deandre Zimmerman, Waupaca Foundry Scott Hiles, Kohler Company Julia Scruton, Baker Manufacturing
9:45 AM - 10:00 AM	**Break**
10:00 AM - 10:45 AM	**Industry 4.0 Meets Sand Additive Manufacturing** John (Chip) Keough, LightSpeed Concepts Inc.
10:45 AM - 11:00 AM	**Recruiting of Labs for ASTM E2567 Interlaboratory Study (ILS)** Lyle Heberling, Iron Casting Research Institute
11:00 AM - 12:00 PM	**Infiltration of Contaminants in the Lining Materials** Tim Hoyt, Allied Minerals

All Technical Sessions will be held in the Calhoun Ballroom.

12:00 - 1:30 PM	**Lunch/Annual Meeting** Calhoun Ballroom
1:30 - 2:30 PM	**Panel Discussion: Importance of Sand, Core, and 3D Components in Ductile Iron** Eliminating the Need for Core Wash to Control Iron Penetration by Controlling Aggregate Sizing Al Jacobson, American Colloid Green Sand Control and New Technologies Tom Arenholz, Simpson Technologies Design Considerations/Potential Defects from 3D Cores Dave Rittmeyer, Matthews International
2:30 - 3:00 PM	**The Great Freeze: A Case Study, Problem Solving & Lessons Learned on a Cupola Furnace** John Gatewood and Eric Gokey, Cadillac Casting
3:00 - 3:15 PM	**Break**
3:15 - 3:45 PM	**Yield Improvement Case Study** Trevor Beach, Betz Industries
3:45 - 5:00 PM	**Sage Advice** Eli David, FerroGlobe, Tom Prucha, Metal Morphasis LLC, Dave Williams, Retired, Gene Muratore, Retired
6:00 - 7:00 PM	**Reception** The Gallery
7:00 - 9:00 PM	**Dinner** Calhoun Ballroom

FRIDAY HOOSIER PATTERN, INC. FOUNDRY TOUR

TIMES ARE EST	FRIDAY, JUNE 2
8:00 AM	**Hoosier Pattern Foundry Tour** The bus will depart from the lobby at 7:15 AM and return to the hotel between 10:00 - 10:30 AM.

BYO PPE

Please bring your own steel-toed shoes and eye protection.

ABOUT HOOSIER PATTERN INC.

At Hoosier Pattern, they invest heavily in their technology. They own and operate multiple 3D sand printers in-house. They have added a 5-axis machining center, four Doosan machining centers, and one Doosan 4-axis horizontal machining center. Both foundry tooling and 3D-printed sand follow their rigorous quality-control systems to ensure the industry's highest possible standards throughout each stage.

TECHNICAL SESSION DETAILS

Impact of Steel Scrap Tramp Elements in Ductile Iron Properties

Paul Sanders and Dale Dewald, Michigan Tech University

This DIS sponsored research project identified boron and manganese as elements of concern in Advanced High Strength Steel (AHSS) scrap streams. The effects of these elements on the microstructure and mechanical properties of ductile iron were reviewed in the literature and explained as much as possible using thermodynamic and kinetic analysis. A pilot-scale design of experiments was designed and executed with Elkem/NTNU to assess the effect of boron coupled with the pearlite formers copper, manganese, and tin. Initial strategies were piloted to remove boron into the slag with Waupaca and manganese by oxygen blowing.

Internships: How to do an Internship, The Value of Internship

Deandre Zimmerman, Waupaca Foundry; Scott Hiles, Kohler Company; and Julia Scruton, Baker Manufacturing

This panel will discuss the value in internships, projects developed and assigned, assigning a mentor/sponsor, allowing the intern to experience the day to day work, intern housing (making an interns life easier), engaging interns with the local area, and how to run an internship. In addition, each panelist will be providing a broad overview of how their company transformed its internship program into what it is today.

TECHNICAL SESSION DETAILS CONTINUED

Industry 4.0 Meets Sand Additive Manufacturing

John (Chip) Keough, LightSpeed Concepts Inc.

John will be drilling down on both emerging technology and its interaction with, and accommodation of, the rapidly changing market for ductile iron castings.

Recruiting of Labs for ASTM E2567 Interlaboratory Study (ILS)

Lyle Heberling, Iron Casting Research Institute

This is a brief overview of the ILS using Image Analysis to determine Nodularity% and Nodule count with the intent of recruiting labs to participate.

Infiltration of Contaminants in the Lining Materials

Tim Hoyt, Allied Minerals

This presentation will provide general information on refractory materials for melting, holding and transfer vessels. It will discuss the building blocks of refractories and corresponding contaminants associated with those raw materials. In addition, contaminants associated with the refractory materials and the melt process will be discussed. This session will highlight where contamination can be adverted and where contamination can be an issue as it relates to refractory materials.

Panel Discussion: Importance of Sand, Core, and 3D Components in Ductile Iron

Eliminating the Need for Core Wash to Control Iron Penetration by Controlling Aggregate Sizing

Al Jacobson, American Colloid

This presentation highlights a case study where Grede St. Cloud Foundry was able to eliminate the need for core wash by changing the aggregate/sand sizing on only the cores that had issues with iron penetration/rough surfaces. The presentation shows how they were able to implement running 2 different grain sizes of sand in their coreroom. It also shows how they took various steps to mitigate the negative issues of having finer sand in their green sand system.

Green Sand Control and New Technologies

Tom Arenholz, Simpson Technologies

Tom will present on highlighting current research and potential projects in the green sand realm. He will discuss the importance and value of societies and committees for networking within the foundry industry and utilizing your connections to help solve your foundry problems.

Design Considerations/Potential Defects from 3D Cores

Dave Rittmeyer, Matthews International

When using 3D Printed Sand there are many things to consider similar to traditional molds and cores. Handling printed sand safely and producing good castings are the top priorities. In this presentation, David will review some standard practices for both along with some key things to avoid when using printed sand.

TECHNICAL SESSION DETAILS CONTINUED

The Great Freeze: A Case Study, Problem Solving and Lessons Learned on a Cupola Furnace

John Gatewood and Eric Gokey, Cadillac Casting Inc.

Cadillac Casting Inc. experienced an unprecedented event in which a failure in the system caused their cupola to freeze. Several methods of removing the “slug” of metallics from the stack were attempted. This case study will cover the events leading up to the freezing of the cupola, how the “slug” of metallics was eventually removed, and lessons learned along the way.

Yield Improvement Case Study

Trevor Beach, Betz Industries

Reviewing examples of yield improvements through different methods. One method is optimizing gating systems. A second method discussed is optimizing riser size. The third example is utilizing exothermic risers to improve mold yield. The last section reviewed is the analysis of the number of impressions on a pattern. Mold yield has been found to range from 35 to over 70% for most ductile iron foundries. The old standard being 50% resulting in foundries charges into the melt operation being 50% returns and 50% steel scrap. The greater the mold yield, the greater the efficiency and profitability of the part. To continue to compete with foreign markets and alternative materials, conscious effort to maximize yield is important.

Sage Advice

Eli David, FerroGlobe; Tom Prucha, Metal Morphasis LLC; Dave Williams, Retired; Gene Muratore, Retired

"Sage Advice" is a presentation that will offer valuable insight from four professionals. Each speaker has decades of experience in their respective fields and will share their knowledge and experiences in our dynamic industry.

ATTENDEE LIST

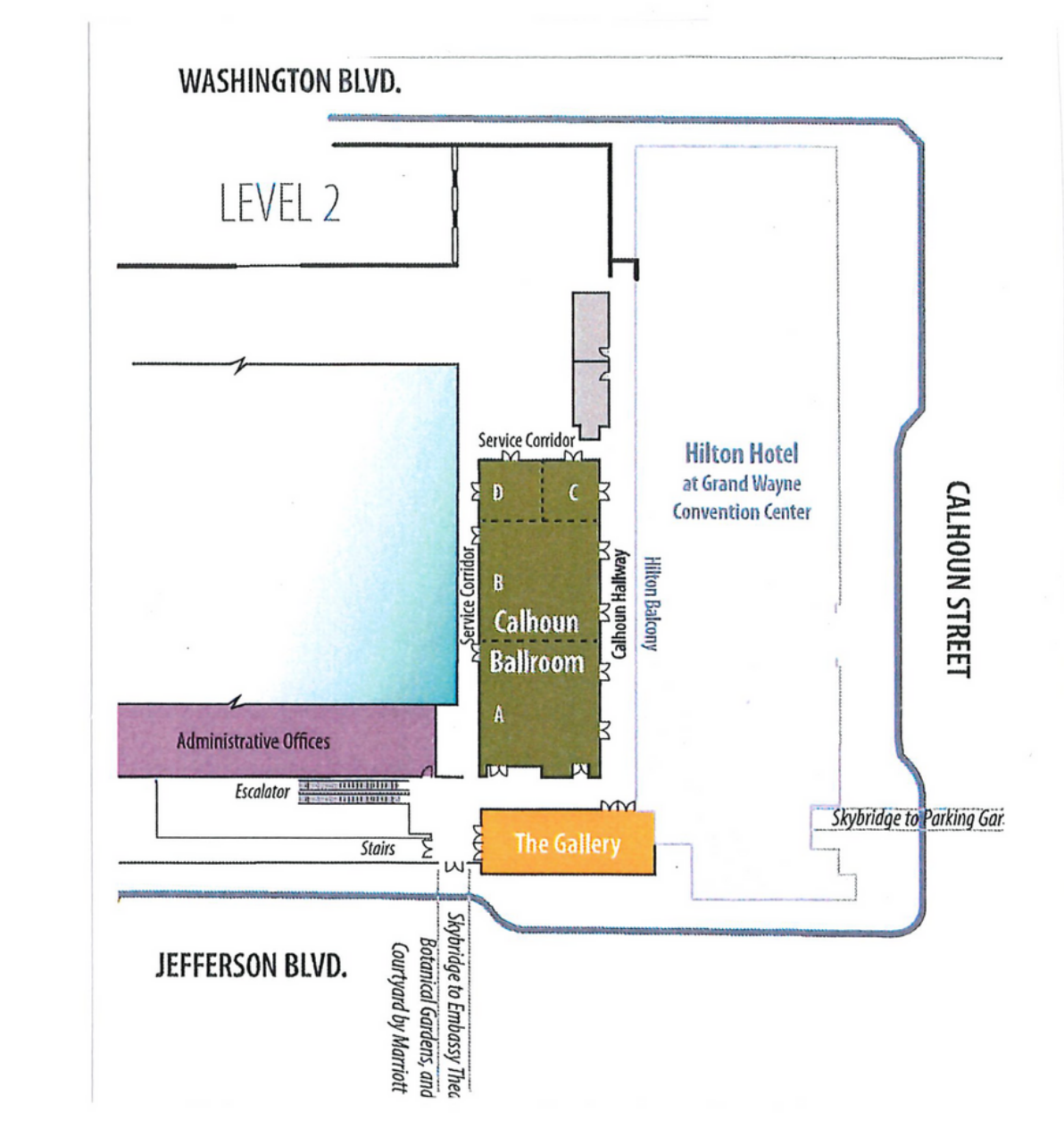
Aalberts surface technologies Jeremy Lipshaw
Aalberts surface technologies Kathy Hayrynen
AFS National Travis Frusch (guest)
Allied Mineral Products Tim Hoyt (speaker)
Allied Mineral Products Ben Hunsicker
Allied Mineral Products Jim McMinn
American Colloid Al Jacobson (speaker)
Badger Mining Corporation Stephen Ryan
Baker Manufacturing Julia Scruton (speaker)
Baker Manufacturing Julie Wilhelm
BCI Solutions Travis Hepfner
Betz Industries Trevor Beach (speaker)
Cadillac Casting Eric Gokey (speaker)
Cadillac Casting John Gatewood (speaker)
Cadillac Casting Rick May
Carpenter Brothers Randy Cline
Carpenter Brothers Chris Lee
Carpenter Brothers Jay Morrison
Caterpillar Riley Kerestes
Charter Dura-Bar Brad Steinkamp
Consolidated Mill Supply David Petry
DIS Alumni Group Dave Williams (speaker)
DIS Alumni Group Gene Muratore (speaker)
DIS Alumni Group Richard B. Gundlach
Dotson Company Ashley Folden-Ecker
Dotson Company Eric Nelson
Dotson Company Jean Bye
Draxton Luis Zertuche
Electric Controls and Systems Zach Meadows
Elkem Materials Rob Logan
Farrar Corporation Robert Pyle
Farrar Corporation Scott Case
Ferroglobe Andrew Dickey
Ferroglobe Eli David (speaker)
Ferroglobe Michael Buchek

Ferroloy John Herndon
Ferroloy Ryan Henderson
Foundry Education Foundation (FEF) Nick Bacik
Glidewell Specialties Foundry Co. Mark Fields
HA International Svetlana Dodik-Pelja
Hickman, Williams & Company Brian Johnson
Hickman, Williams & Company James Csonka
Iron Casting Research Institute (ICRI) Lyle Heberling (speaker)
Inductotherm Corporation Mike Looby
Inductotherm Corporation Michael Fanz-Huster
John Deere Drew James
John Deere Waterloo Works William Gammill
Kohler Scott Hiles (speaker)
Kondex Casey Placek
Kondex Mariah Roth
Larpen Metallurgical Service Mike Mutton
Larpen Metallurgical Service Sean Marek
Lightspeed Concepts John R. (Chip) Keough (speaker)
MAGMA Foundry Technologies Christopher Heczko
Matthews International Dave Rittmeyer (speaker)
Meritor Steven Thelen
Metal Morphasis Thomas Prucha (speaker)
Metal Technologies Hayden Smith
Metal Technologies Matt Burnell
Metal Technologies Kramer Pursell
Metal Technologies Lenny Basaj
Michigan Tech University Paul Sanders (speaker & guest)
Michigan Tech University Dale Dewald (speaker & guest)
Miller and Company Audrey Howley
Miller and Company Gregory Benz
Miller and Company Ken Way
Miller and Company Peter Kim
Neenah Foundry Company Lizeth Medina
Northfield Manufacturing Scott Tynan (guest)
OmniSource John Wassell
OmniSource John Wallace
OmniSource Julie Meyers
OmniSource George Gogos

Oshkosh Corporation Vladimir Vega-Valer
Plymouth Foundry Sam Schlosser
Poitras Foundry Ltd. Nic Stephanian
Primetrade Bobby Stone
Primetrade Brandon Kacko
Profound Alloys Luke Dix
Profound Alloys Vann Merrell
Prohimsa Gabriel Trujillo
PROTERIAL Anhua Yu (guest)
REFCOTEC Harry Seibel
REFCOTEC Matt Dewood
Rio Tinto Iron & Titanium Yujiao Zou
Rochester Metal Products Bill Nestel
Rochester Metal Products Craig Sederholm
SELEE Corporation Jason Lachance
SELEE Corporation Jim Schmahl
SELEE Corporation Robert Appling
Simpson Technologies Tom Arenholz (speaker)
SinterCast David Gilson
St. Marys Foundry Angela Schmeisser
St. Marys Foundry Matt Pettus
St. Marys Foundry Karl Warsinski
Taylor and Fenn Craig Rang (guest)
The Ductile Iron Society Claira Stollfus
The Ductile Iron Society Laura Gustafson
The Ductile Iron Society Michelle Ring
The Quality Castings Company Matthew Adams
Ward Manufacturing Ning Lin (guest)
Waupaca Foundry Amanda Bernardy
Waupaca Foundry Deandre Zimmerman (speaker)
Waupaca Foundry Jason Bush

Thank you to all our attedees!

CONFERENCE MAP



NOTES

THANK YOU SPONSORS

ALLIED MINERAL PRODUCTS

EC&S DESIGN+BUILD

Elkem

HA International LLC
Member of HA Group

MILLER
A CONSOLIDATED MILL SUPPLY COMPANY

NUGENT SAND

Omni

ST. MARYS FOUNDRY
an Ariel Company

REFCOTEC
Where mold and metal meet.

SAVE THE DATE

KEITH MILLIS SYMPOSIUM 2023

OCTOBER 16TH - 20TH
CROWNE PLAZA ATLANTA
PERIMETER AT RAVINIA

4355 ASHFORD DUNWOODY
ATLANTA, GA 30346